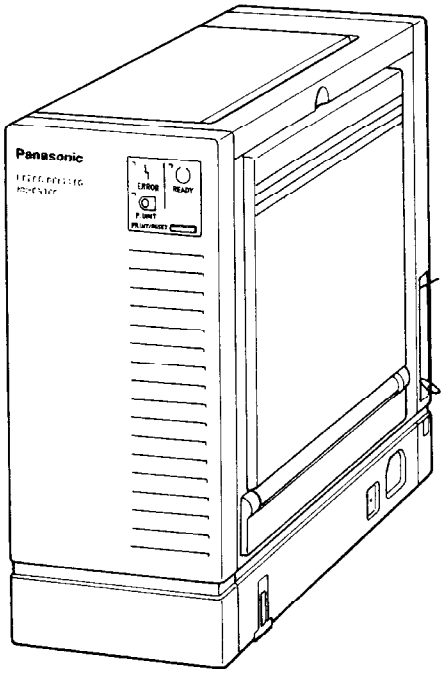
ORDER NO.KM69505546C2

Service Manual

Laser Printer

KX-P6150

SD



SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
INDICATORS/ИНДИКАТОРЫ
COMPONENT IDENTIFICATION/РАСПОЛОЖЕНИЕ БЛОКОВ И УЗЛОВ ПРИНТЕРА
PRINT PROCESS/ПРОЦЕСС ПЕЧАТИ
OPERATION/РУКОВОДСТВО ПО ЭКСПЛУАТАЦИИ
BLOCK DIAGRAM/БЛОК-СХЕМА
EXPLANATION OF CONNECTORS/ОПИСАНИЕ РАЗЪЕМОВ
COMPONENT REFERENCE GUIDE/ПРИНЦИПИАЛЬНОЕ НАЗНАЧЕНИЕ ВЫВОДОВ МИКРОСХЕМ
SCHEMATIC DIAGRAM/ПРИНЦИПИАЛЬНАЯ СХЕМА
REMOVAL AND REPLACEMENT PROCEDURES/МЕТОДИКА РАЗБОРКИ И ЗАМЕНЫ КОМПОНЕНТОВ
PREVENTATIVE MAINTENANCE/ПРЕВЕНТИВНОЕ ОБСЛУЖИВАНИЕ
TROUBLESHOOTING/НЕИСПРАВНОСТИ И МЕТОДЫ ИХ УСТРАНЕНИЯ
SPECIAL TOOL/СПЕЦИАЛЬНЫЕ ИНСТРУМЕНТЫ И ПРИСПОСОБЛЕНИЯ ДЛЯ РЕМОНТА
REPLACEMENT PART LIST/СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

Panasonic

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1. Introduction

1.1 Specifications

Printer	Printing Method	Semiconductor Laser
	Print Speed	6 pages per minute (ppm) maximum (Letter size paper, text mode, 5% image area, all originals)
	Resolution	300 dots per inch (dpi)
	Paper Feed	1 Multi-purpose manual feed up to 100 sheets of paper
	Paper Output	Up to 50 sheets of paper [75g/m^2(20 lb.)]
	Software Emulation	Panasonic LP (HP Laserjet Series IIP compatible)
	Resident Fonts	PCL mode: Courier 10 pitch, 12 point Upright Medium, Bold, Italic Courier 12 pitch, 10 point Upright Medium, Bold, Italic Courier 15 pitch, 8 point Upright Medium, Italic Courier 16.66 pitch, 7.2 point Upright Medium, Italic Courier 20 pitch, 6 point Upright Medium
	RAM Buffer	1MB (Expandable to a maximum of 2MB with optional 1MB RAM Board, 3MB with optional 2MB RAM Board and 5MB with optional 4MB RAM Board)
	Operating Environment	10 to 32.5°C {50 to 90.5°F} 20 to 80 % RH
	Storage Environment	0 to 35°C {32 to 95°F} 10 to 80 % RH
	Warm Up Time	Approx. 1 minute
	Dimensions	132 (W) x 378 (D) x 287 (H) mm {5.2" x 14.9" x 11.3"}
	Mass {Weight}	Approx. 6.5 kg {14.3 lb.}
	Voltage	220~240V ± 10%
	Frequency	50/60 Hz
	Power Consumption	480 watts Typical (Printing with fuser on) 9 watts Typical (Sleep mode)
	Noise Level	Printing: 48 dBA Standby: Back ground level
	Density Control	Variable
	Fusing System	Heat and Pressure Rollers
	Photoreceptor	Organic Photoconductor (OPC)
	Development Process	One component non magnetic development
	Consumables/Life	Toner: 2,000 pages average Process Unit: 12,000 pages average *5.0% image area with repetitive printing of 10 pages

KX-P6150

Paper ★	Basic Weight	60 to 135 g/m^2 (16 to 36 pounds)	
	Thickness	3.7 to 7.5 mils (1 mil=1/1000")	
	Moisture Content	4% to 6%	
	Smoothness	100 to 300 Sheffield	
	Acid Content	5.5 PH minimum	
	Fusing Compatibility	Must not scorch, melt, offset material, or release hazardous emissions when heated to 392°F (200°C) for 0.1 second	
	Grain	Long grain	
	Cut Edge Conditions	Cut with sharp blades, no paper dust	
	Ash Content	Not to exceed 10%	
	Curl	No allowable curl toward side to be imaged (printed)	
	Packing	Polylaminated moisture proof ream wrap	
	Paper Size	Letter	8.5" x 11" (216 x 279 mm)
		Legal	8.5" x 14" (216 x 356 mm)
		A4	8.27" x 11.7" (210 x 297 mm)
		Executive	7.25" x 10.5" (184.1 x 266.7 mm)
	Envelope Size	Com-10	4.13" x 9.5" (104.9 x 241.3 mm)
		Monarch	3.88" x 7.5" (98.5 x 190.5 mm)
		International DL	4.33" x 8.66" (110 x 220 mm)
		International C5	6.4" x 9.02" (162 x 229 mm)

★ Types of paper to avoid.

1. Extremely smooth or shiny paper or paper that is highly textured.
2. Coated paper.
3. Letterhead imprinted with low temperature o thermography. These materials may transfer onto the fusing roller and cause damage. Any pre-printed paper should use inks compatible with 392°F (200°C) for 0.1 second.
4. Damaged or wrinkled paper, or paper with irregularities such as tabs, staples, etc.
5. Multipart forms or carbonless paper.
6. Paper with a cotton and/or fiber content over 20%.

Interface	Connector Type	57-30360 (AMPHENOL) or equivalent
	Cable	Use a shielded cable 6.6 feet (2 meters) or less in length
Options, Accessories and Supplies	KX-P457	Toner Cartridge (2,000 page life)
	KX-PEP3	Process Unit (12,000 page life)
	KX-PEM1	2MB RAM Expansion Board
	KX-PEM2	4MB RAM Expansion Board
	KX-PEM3	1MB RAM Expansion Board

Specifications are subject to change without notice.

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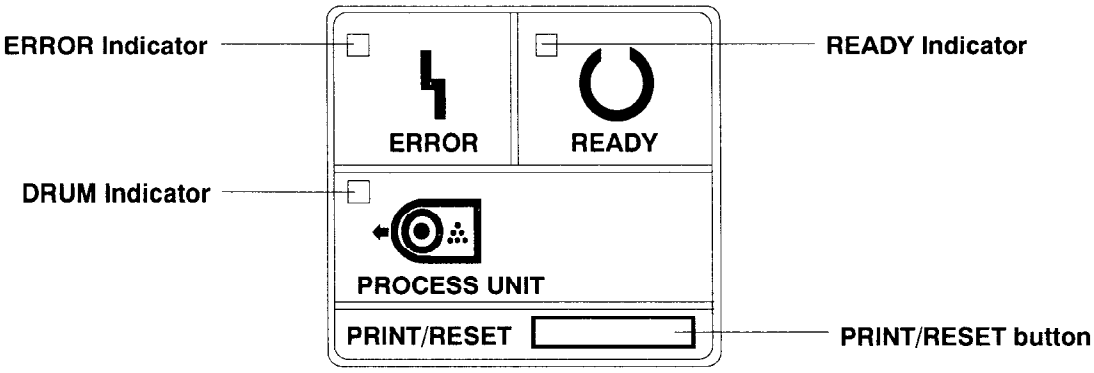
1.2 Indicators



Indicators			Printer Status
ERROR	READY	PROCESS UNIT	
◨	◨	◨	Warming up
□	■	□	Ready for printing
■	□	□	Internal error: Turn the power off, then on again.
□	▨	□	Receiving data, printing or data remain in the printer
▨	□	□	Paper jam, paper empty, left cover open, RAM overflow or RAM overrun
▨	□	■	Process Unit is not installed
□	□	▨	Change Process Unit

◨ : The READY indicator, the ERROR indicator and DRUM indicator will light one after another.

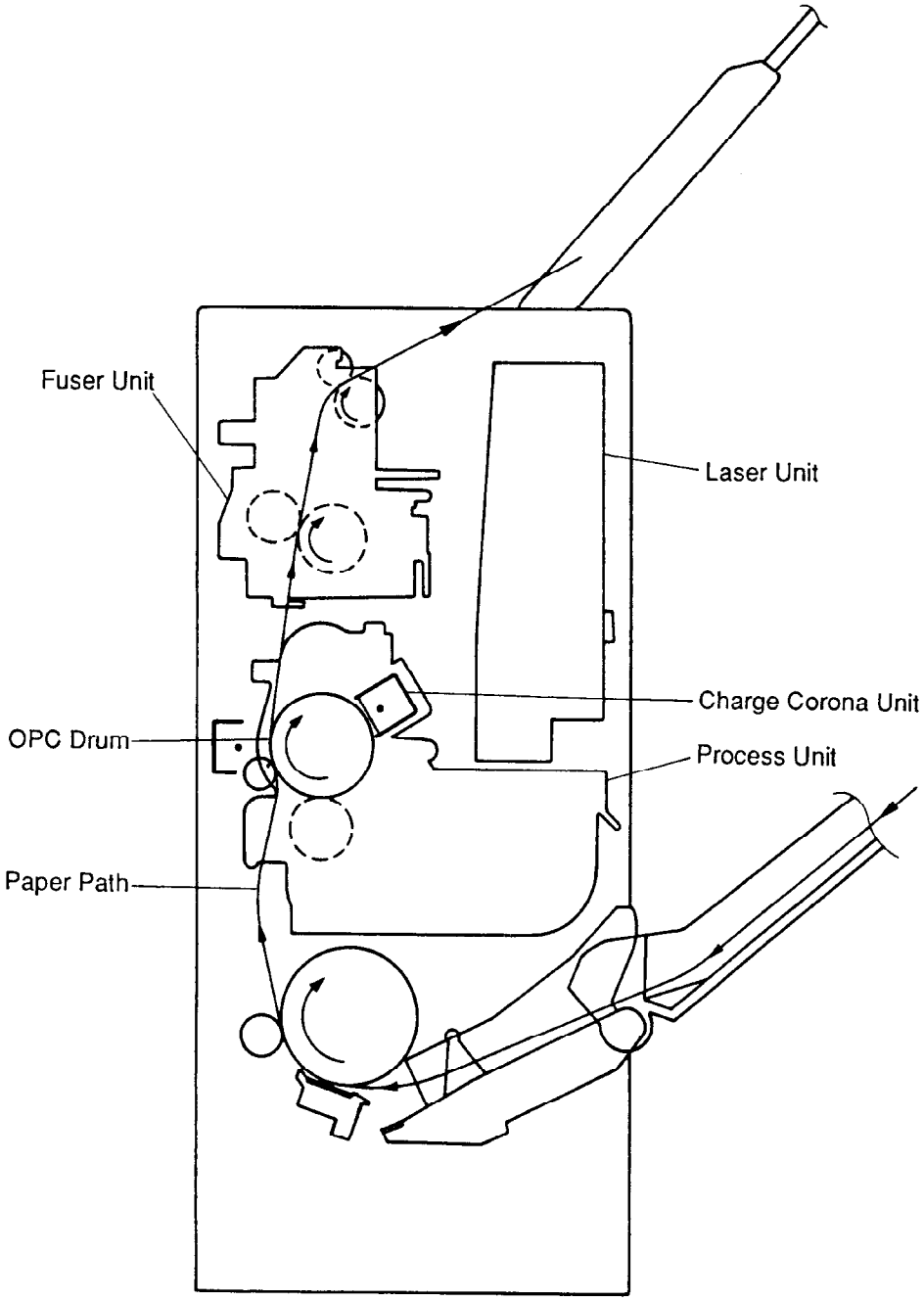
■ : on □ : off ▨ : blinking

Button	Indicators			Function
	ERROR	READY	PROCESS UNIT	
PRINT/RESET button	□	■	□	Print out a status print by pressing this button for **less than** 5 seconds
				Reset the printer by pressing this button for **more than** 5 seconds
	□	▨	□	Print out the remaining data by pressing this button for **less than** 5 seconds
				Reset the printer by pressing this button for **more than** 5 seconds

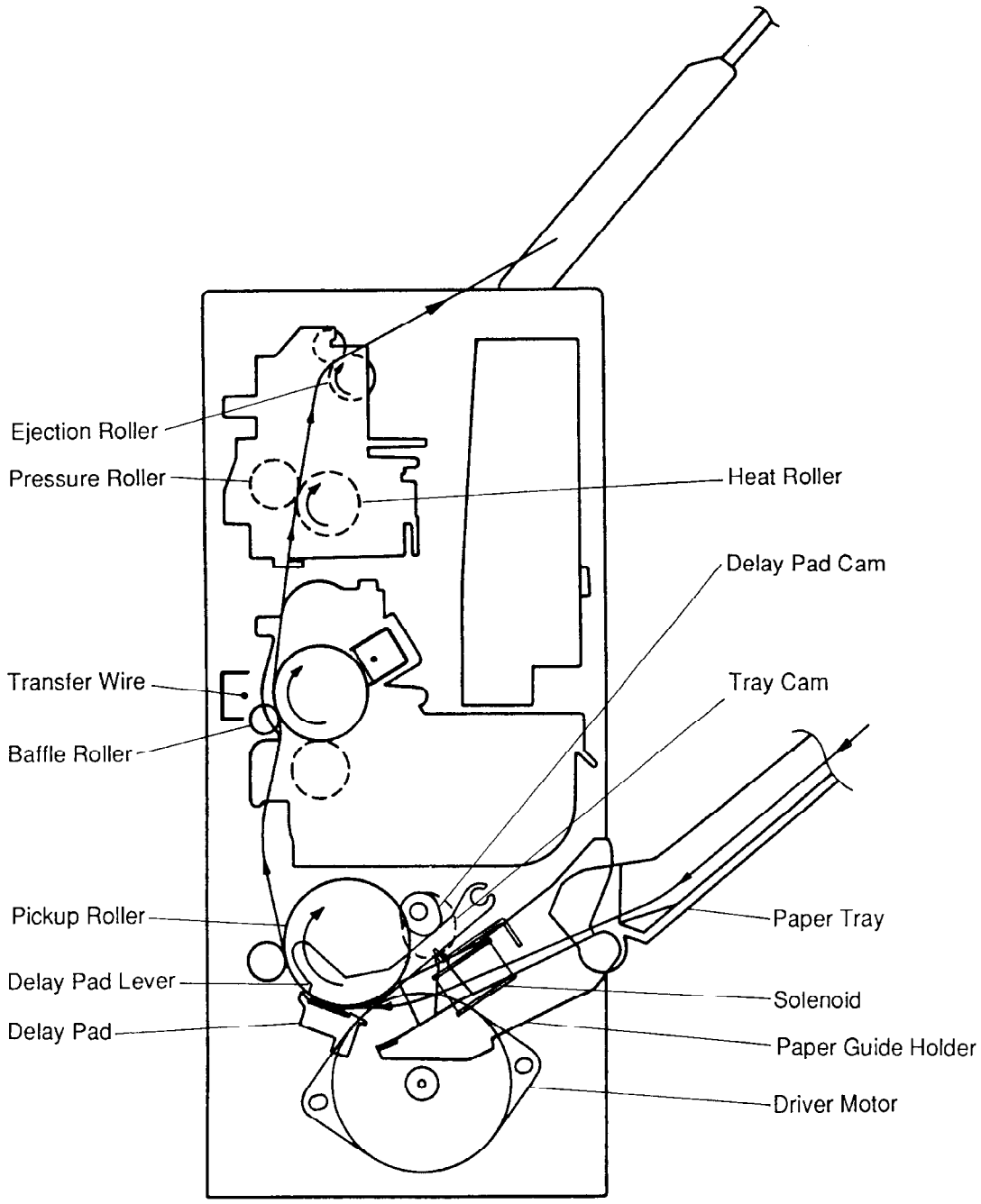
■ : on □ : off ▨ : blinking

1.3 Component Identification

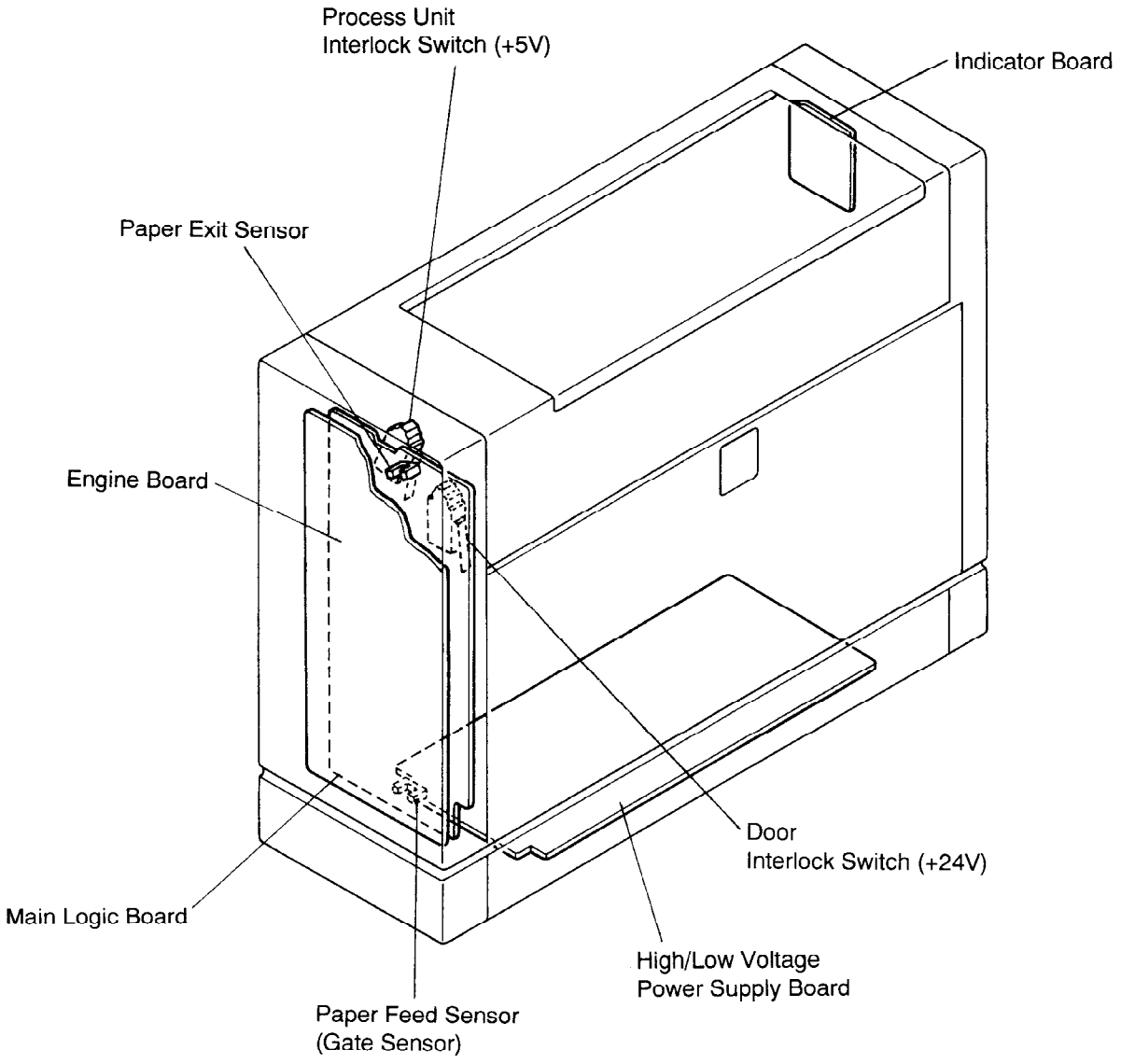
1.3.1 Process Unit, Fuser Unit and Laser Scan Unit



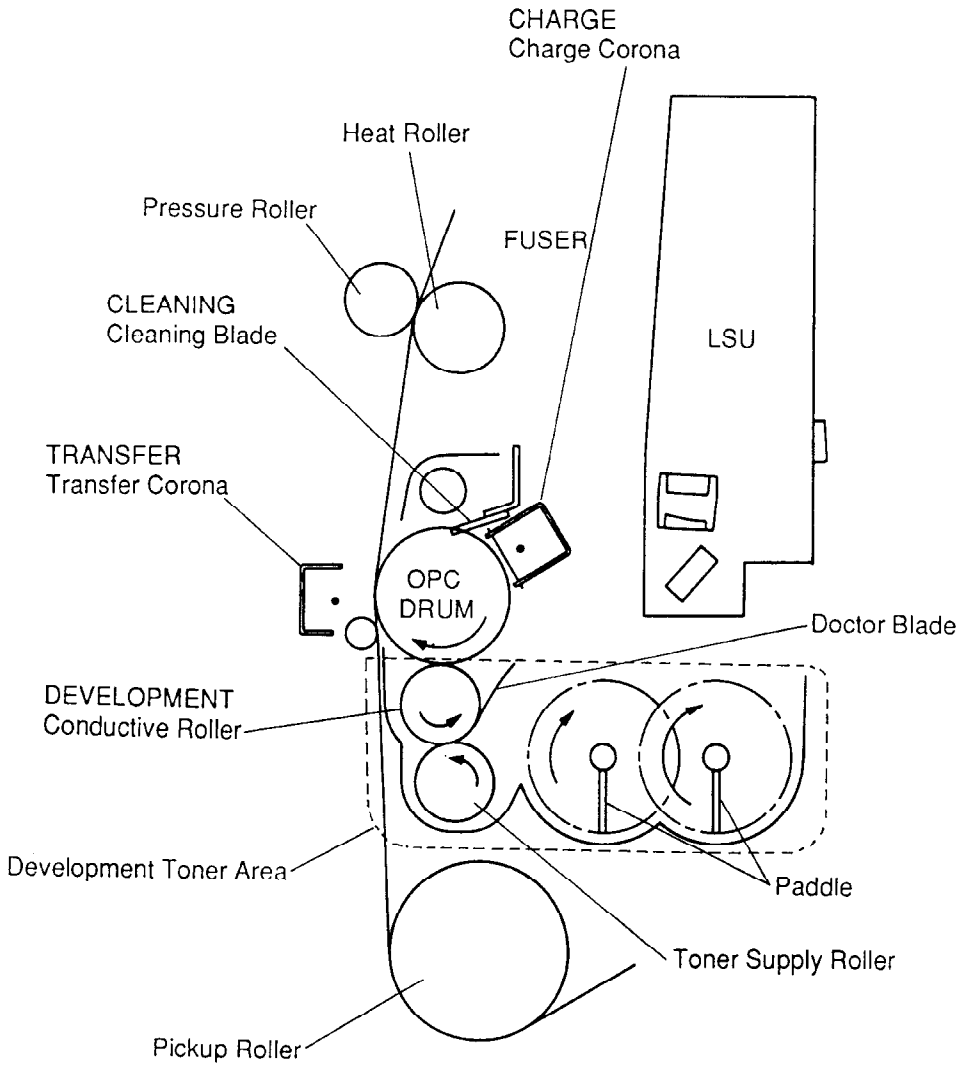
1.3.2 Mechanical Parts, Motor and Solenoid



1.3.3 Control Board, Engine Board, High/Low Voltage Power Supply Board and Sensor



1.4 Print Process



1. Charge

The charge corona applies a high, uniform negative charge to the surface of the organic photoconductor (OPC) drum. The charge level is approximately -680VDC and remains because the OPC drum has a high electrical resistance in the dark.

2. Exposure

The laser beam is reflected by the polygon mirror through the collimator lens and is focused onto the drum after passing through an image-forming (f- θ) lens and a reflection mirror. Wherever the laser beam strikes the drum, the negative charge dissipates. A latent electrical image of two voltages, which corresponds to the original, is formed on the drum.

3. Development

Non-magnetic toner is supplied to the conductive roller by the toner supply roller. The toner on the conductive roller is negatively charged by friction with the toner supply roller, and the doctor blade ensures a thin layer on the surface of the conductive roller. Where the conductive roller touches the drum, the negatively charged toner is attracted to the latent image on the drum, and the latent image is converted to a visible image. A bias voltage of -260VDC is applied to the conductive roller to achieve maximum print quality.

4. Transfer

As the paper is fed between the drum and the transfer corona, a high positive charge is applied to the back of the paper. The negative toner particles are then attracted from the drum surface to the paper. After transfer, the paper is separated from the drum surface by the curvature of the drum.

5. Fusing

Next, the paper passes through the fuser rollers and is subjected to heat and pressure. The fusing temperature is approximately 150Åé (302 F), and the pressure is approximately 0.23kg/cm (2.23N/cm). This bonds, or fuses, the toner into the paper.

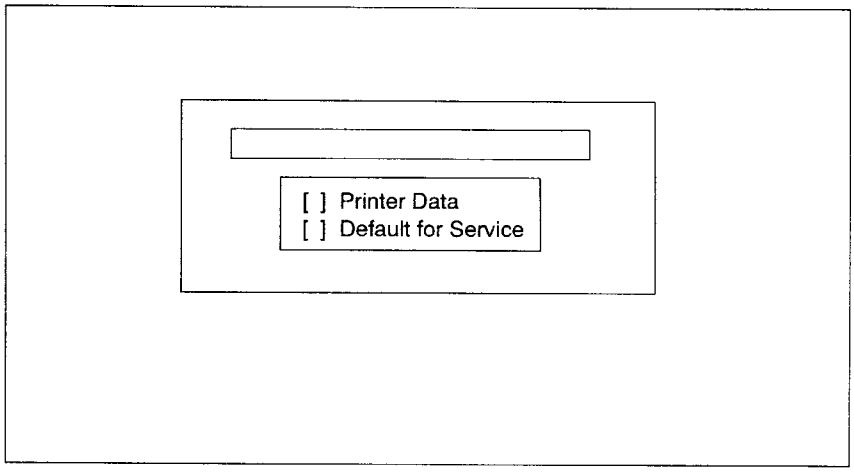
6. Cleaning

After transfer, residual toner remains on the drum surface. A cleaning blade scrapes the drum surface. The used toner is sent to the development toner area via the spiral roller, and it is recycled.

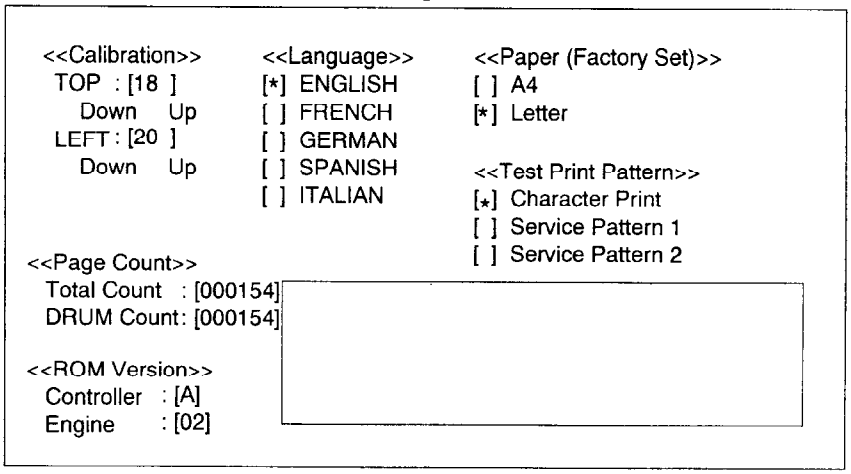
3. Operation

3.1 Start the Service Mode Utility

The service diskette contains a "serv.exe" file.
This utility is a software program for requesting the service data to KX-P6150 printer and receiving the service data from the KX-P6150 printer by the service technician.
Please see the <Fig.1> and <Fig.2>.



<Fig.1>

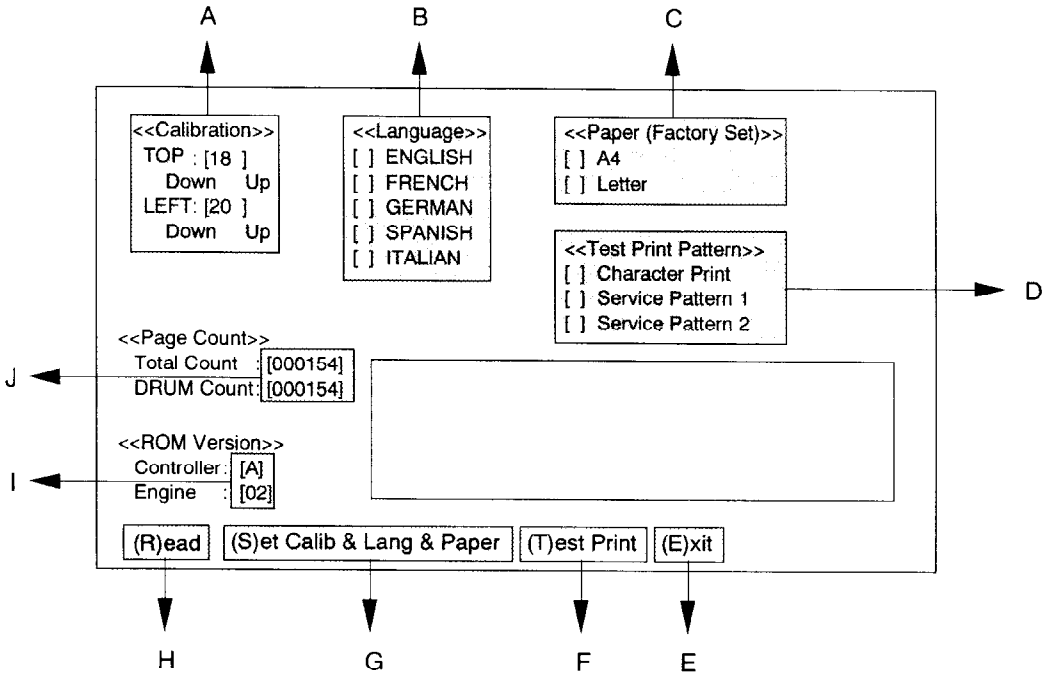


<Fig.2>

Follow the steps below for the proper starting procedure.
If you loaded Status Display, input 'C: P6150 > STATDISP / r '; then press the 'Enter' Key.

1. Insert the service diskette.
2. If your floppy disk drive is "A", execute "A: serv.exe" from DOS.
3. You can see the service mode menu and you can use it.
4. Select "Printer Data" or "Default for Service", as shown in Fig.1.
   All service data (Total page count, DRUM count, Language, Top calibration, Left calibration, Engine version and Controller version) will be displayed. (Fig.2)

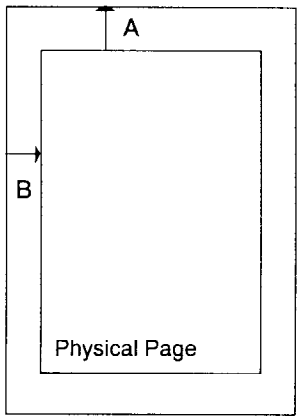
3.2 Service Mode Data



<Fig.3>

1. Top Calibration data and Left Calibration data (<Fig.3>-A)

1 Dot Row= 1/300 inch
Top calibration: 0-60 dots (increments of 1 dot), default= 30 dots
Left calibration: 8-40 dots (increments of 1 dot), default= 24 dots
If you set an illegal Top calibration data, the value 30 is set.
If you set an illegal Left calibration data, the value 24 is set.



A: Top Calibration, B: Left Calibration

2. Language Data (<Fig.3>-B)

Not activated.

3. Paper for Factory Default (<Fig.3>-C)

If user performs a factory default operation, paper setting is shown here.

4. Total Page Count (<Fig.3>-J)

This is a count of the total number of papers fed.

5. DRUM Count(<Fig.3>-J)

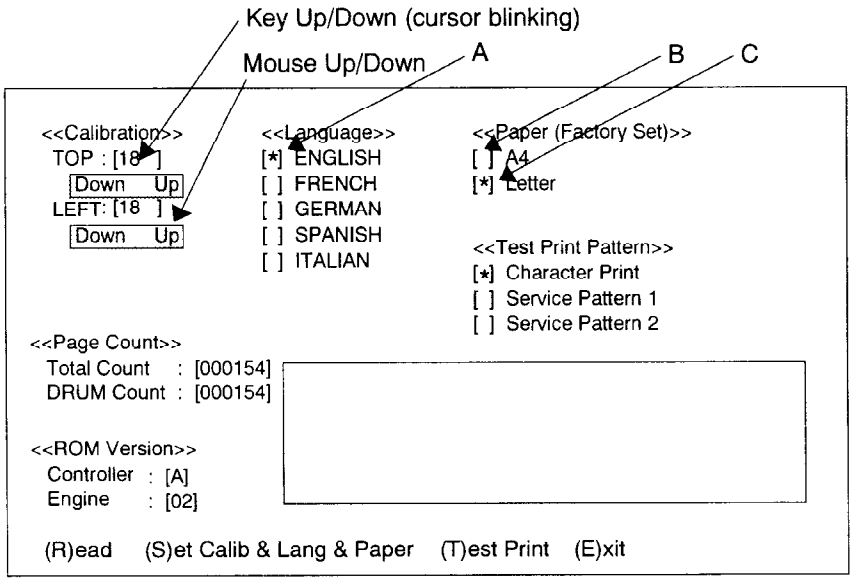
This is a count of the total number of papers fed from the paper tray since the Process Unit was last replaced.

6. Controller ROM version and Engine ROM version(<Fig.3>-I)

The ROM versions in your printer are shown here.

3.3 Operations

1. Set the Top calibration and Left calibration using a mouse (<Fig.3>-A)



<Fig.4>

a. If you want to set the Top calibration data, select the Top calibration data.
b. Input the data through the keyboard by selecting Up or Down with the mouse.
c. Select "Set the Calibration" with the mouse button.
   You can set the data and you can confirm the data by reading the data from the printer again. (If you set an illegal Top calibration data, the value 30 is set.)

2. Set the Top calibration and Left calibration by Keyboard (<Fig.3>-A)

You can jump to the Top calibration, Left calibration, "Set the Calibration" and "Read the Printer" selections by using the 'Tab' key.

a. If you want to set the Top calibration data, select the Top calibration data with the 'Tab' key.
b. Input the data by Key (Left arrow key, Right arrow key).
c. Select "Set the Calibration" by using the 'Enter' Key.
   You can set the data and you can confirm the data by reading the data from the printer again. (If you set an illegal Top calibration data, the value 30 is set.)

3. Set the Paper Default data

You can select 'A4' or 'Letter' by TAB Key, Up Key, Down Key and Enter Key.
(If you operate the 'TAB' key, the cursor jumps to position 'B' (<Fig.4>) when the cursor position is 'A'. If you operate the 'Up' or 'Down' Key, the cursor jumps to position 'C' (<Fig.4>) when the cursor position is 'B'.)

4. Read the printer's data (<Fig.3-H>)

If you want to see the service data from the printer, select "Read' button (Mouse click or press the 'R' Key; then press the 'Enter' Key).
You can confirm the service data.

5. Set the Calibrations and Language and Paper to the printer (<Fig.3-G>)

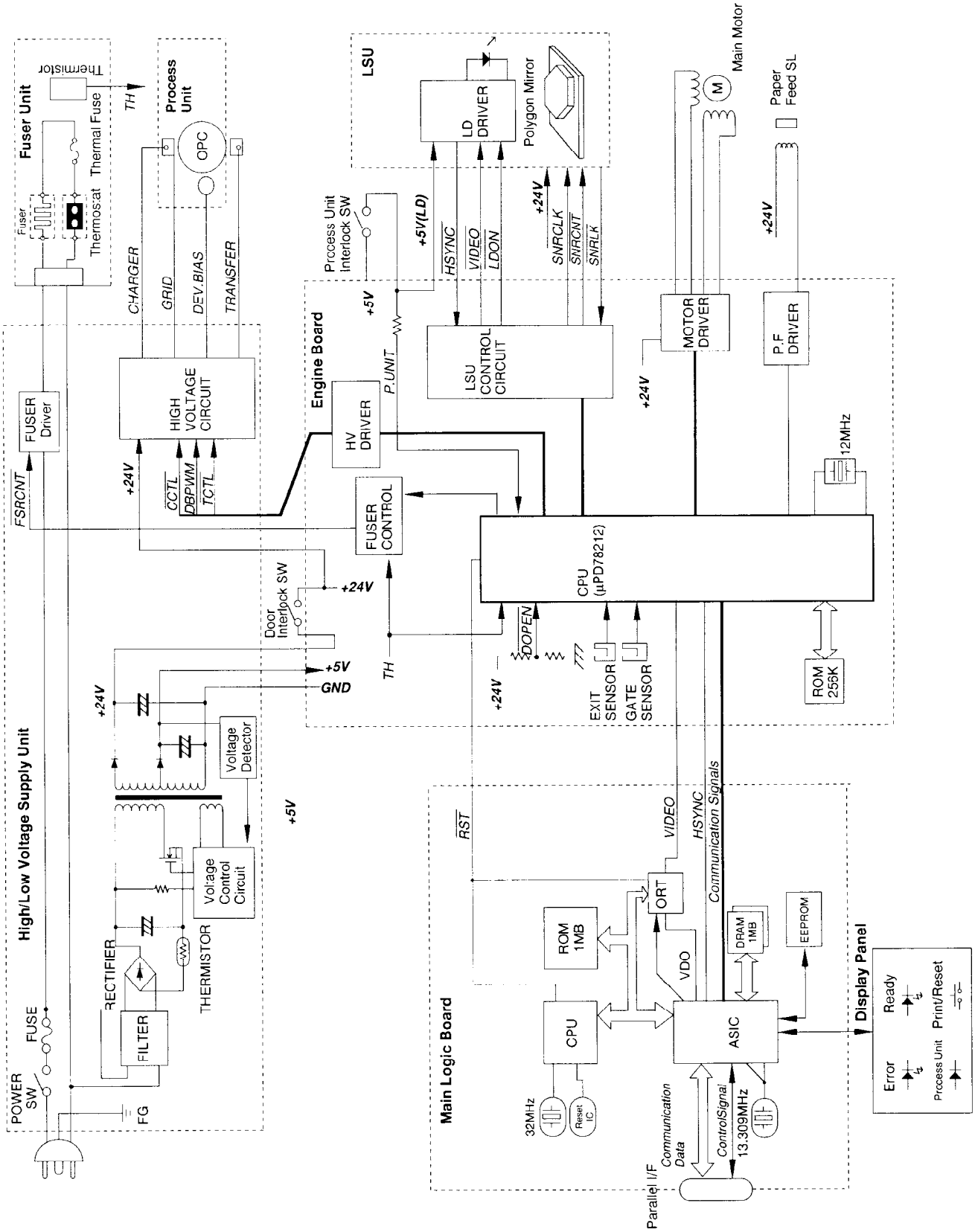
If you want to send the service data to the printer, select "Set Calib & Lang & Paper" button (Mouse click or press the 'S' Key; then press the 'Enter' Key).
You can send your input data to the printer and you can confirm the service data by reading the data.

6. Check the printed the paper (<Fig.3-F>)

a. If you want to check the printed paper, select "Test Print" button (Mouse click or press the 'T' Key; then press the 'Enter' Key).
b. You can select the Character Print or Service Pattern 1 or Service Pattern 2 (<Fig.3-D>) (Mouse click or press the 'Up' or 'Down' Key; then press the 'Enter' Key).

5. Electronic Circuit Description and Diagrams

5.1 Block Diagram

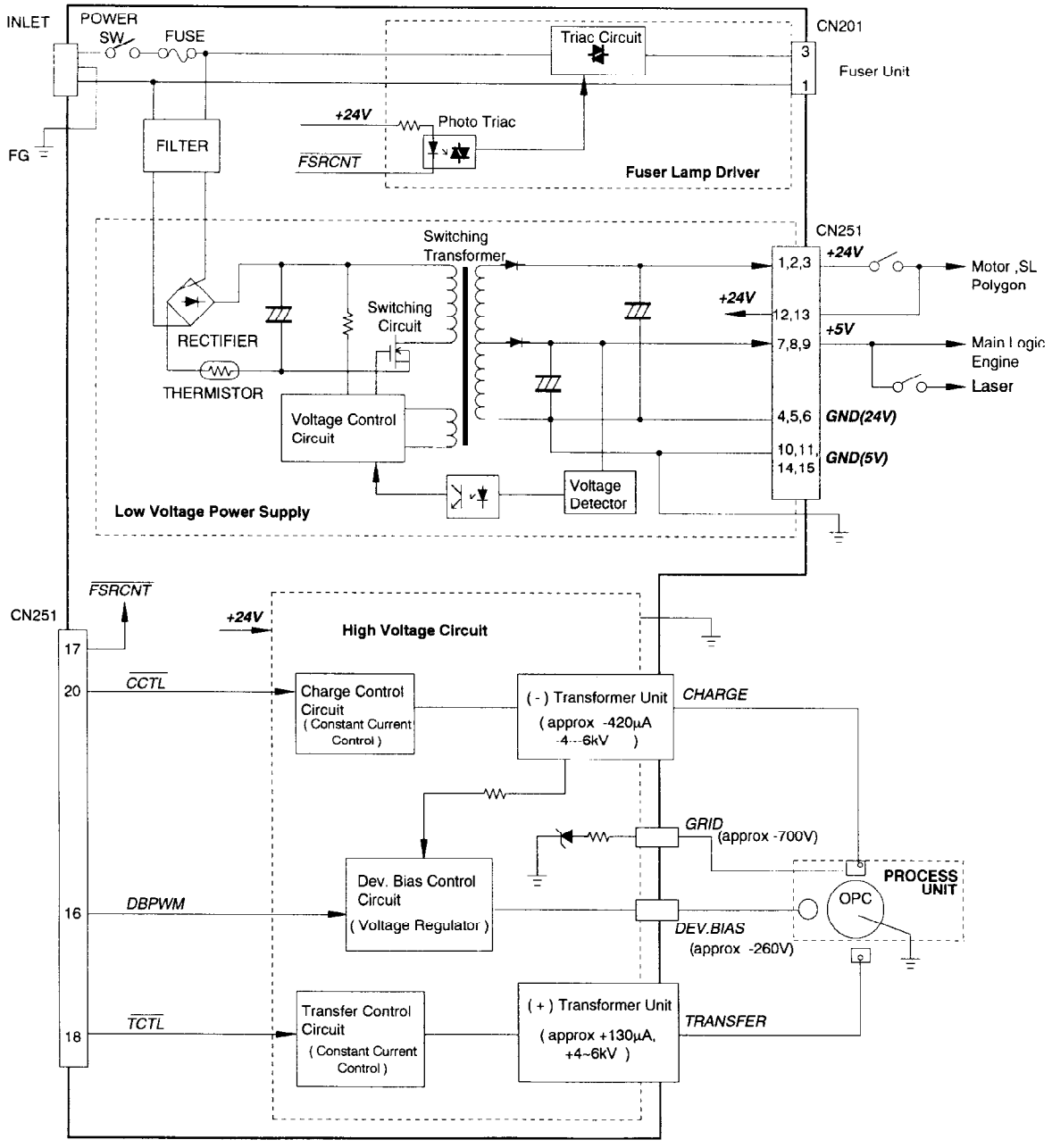


5.2 High/Low Voltage Power Supply Unit

5.2.1 Block Diagram

Important Safety Notice

1. **Do not attempt to repair this power supply unit. This supply requires proper calibration after any component replacement. Failure to do so may result in component damage, shock fire or other hazard.**
2. **High voltage is present on the power supply board. Use caution when measuring voltage levels.**
3. **Do not power on the power supply without the main logic board and engine board connected to the output side of the supply. Component damage could occur if a load is not connected to the supply.**



5.6 Explanation of Connectors

Main Logic Board
CN1 (to Engine Board)

Pin No.	Signal Name	Description	Direction
1	$\overline{\text{TOP}}$	Top of Paper	IN
2	GND(5V)	-------	-
3	$\overline{\text{SBSY}}$	Status Busy	IN
4	GND(5V)	-------	-
5	$\overline{\text{VIDEO}}$	Video Data	OUT
6	GND(5V)	-------	-
7	HSYNC	Horizontal Synchronous Signal	IN
8	GND(5V)	-------	-
9	$\overline{\text{RST}}$	RESET	OUT
10	GND(5V)	-------	-
11	CXD	Command Data	OUT
12	GND(5V)	-------	-
13	CCLK	Communication Clock	IN/OUT
14	GND(5V)	-------	-
15	SXD	Status Data	IN
16	GND(5V)	-------	-
17	$\overline{\text{PRINT}}$	Print Request	OUT
18	GND(5V)	-------	-
19	$\overline{\text{CBSY}}$	Command Busy	OUT
20	5V	-------	IN
21	$\overline{\text{PRDY}}$	Print Ready	IN
22	5V	-------	IN
23	PPRDY	Printer Power Ready	IN
24	5V	-------	IN

CN2 (Parallel I/F)

Pin No.	Signal Name	Description	Direction
1	$\overline{\text{STB}}$	Centronics Strobe	IN
2	DATA1	Centronics Data1	IN/OUT
3	DATA2	Centronics Data2	IN/OUT
4	DATA3	Centronics Data3	IN/OUT
5	DATA4	Centronics Data4	IN/OUT
6	DATA5	Centronics Data5	IN/OUT
7	DATA6	Centronics Data6	IN/OUT
8	DATA7	Centronics Data7	IN/OUT
9	DATA8	Centronics Data8	IN/OUT
10	$\overline{\text{ACK}}$	Centronics Acknowledge	OUT
11	BUSY	Centronics Busy	OUT
12	PERROR	Centronics Paper Error	OUT
13	$\overline{\text{SLCT}}$	Centronics Select	OUT
14	$\overline{\text{AUTOFD}}$	Centronics AutoFeed	IN
15	NC	-------	-
16	SG	Signal Ground	-
17	FG	Frame Ground	-
18	+5VRES	-------	-
19	RETURN	Signal Ground	-
20	RETURN	Signal Ground	-
21	RETURN	Signal Ground	-
22	RETURN	Signal Ground	-
23	RETURN	Signal Ground	-
24	RETURN	Signal Ground	-
25	RETURN	Signal Ground	

Pin No.	Signal Name	Description	Direction
26	RETURN	Signal Ground	-
27	RETURN	Signal Ground	-
28	RETURN	Signal Ground	-
29	RETURN	Signal Ground	-
30	RETURN	Signal Ground	-
31	$\overline{\text{INIT}}$	Centronics Initialize	IN
32	$\overline{\text{FAULT}}$	Centronics Fault	OUT
33	SG	Signal Ground	-
34	NC	------	-
35	NC	------	-
36	$\overline{\text{SLCTIN}}$	Centronics Select In	IN

CN3 (to Display Panel)

Pin No.	Signal Name	Description	Direction
1	GND	------	-
2	P.UNIT LED	Process Unit LED	OUT
3	GND	------	-
4	$\overline{\text{KEY}}$	PRINT/RESET KEY	IN
5	READY LED	READY LED	OUT
6	ERROR LED	ERROR LED	OUT
7	GND	------	-

CN4 (Optional Memory)

Pin No.	Signal Name	Description	Direction
1A	DA9	DRAM Address 9	OUT
2A	DA7	DRAM Address 7	OUT
3A	DA5	DRAM Address 5	OUT
4A	DA3	DRAM Address 3	OUT
5A	DA1	DRAM Address 1	OUT
6A	Vcc	----	---
7A	Vcc	----	---
8A	Vcc	----	---
9A	Vcc	----	---
10A	$\overline{\text{RAS2}}$	Row Address Strobe 2	OUT
11A	$\overline{\text{CASH}}$	Column Address Strobe High	OUT
12A	$\overline{\text{CASL}}$	Column Address Strobe Low	OUT
13A	GND	----	
14A	GND	----	---
15A	DD15	DRAM Data 15	---
16A	DD13	DRAM Data 13	IN/OUT
17A	DD11	DRAM Data 11	IN/OUT
18A	DD9	DRAM Data 9	IN/OUT
19A	DD7	DRAM Data 7	IN/OUT
20A	DD5	DRAM Data 5	IN/OUT
21A	DD3	DRAM Data 3	IN/OUT
22A	DD1	DRAM Data 1	IN/OUT
23A	GND	----	---
24A	GND	----	---
25A	GND	----	---
1B	DA8	DRAM Address 8	OUT
2B	DA6	DRAM Address 6	OUT
3B	DA4	DRAM Address 4	OUT
4B	DA2	DRAM Address 2	OUT

Pin No.	Signal Name	Description	Direction
5B	DA0	DRAM Address 0	OUT
6B	Vcc	——	—
7B	Vcc	——	—
8B	Vcc	——	—
9B	NC	No Connection	—
10B	$\overline{WE}$	DRAM Write Enable	OUT
11B	$\overline{RAS1}$	Row Address Strobe 1	OUT
12B	NC	No Connection	—
13B	GND	——	—
14B	GND	——	—
15B	DD14	DRAM Data 14	IN/OUT
16B	DD12	DRAM Data 12	IN/OUT
17B	DD10	DRAM Data 10	IN/OUT
18B	DD8	DRAM Data 8	IN/OUT
19B	DD6	DRAM Data 6	IN/OUT
20B	DD4	DRAM Data 4	IN/OUT
21B	DD2	DRAM Data 2	IN/OUT
22B	DD0	DRAM Data 0	IN/OUT
23B	GND	——	—
24B	GND	——	—
25B	GND	——	—

High/Low Voltage Power Supply Unit
CN251 (to Engine Board)

Pin No.	Signal Name	Description	Direction
1	24V OUT	——	OUT
2	24V OUT	——	OUT
3	24V OUT	——	OUT
4	GND(24V)	——	-
5	GND(24V)	——	-
6	GND(24V)	——	-
7	5V	——	OUT
8	5V	——	OUT
9	5V	——	OUT
10	GND(5V)	——	-
11	GND(5V)	——	-
12	24V	——	IN
13	24V	——	IN
14	GND(5V)	——	-
15	GND(5V)	——	-
16	$\overline{DBPWM}$	Deve Bias PWM Signal	IN
17	$\overline{FSRCNT}$	Fuser Control	IN
18	$\overline{TCTL}$	Transfer Control	IN
19	$\overline{CCHG}$	Charger Current Change	IN
20	$\overline{CCTL}$	Charger Control	IN

CN201 (to Fuser Unit)

Pin No.	Signal Name	Description	Direction
1	LAMP	Fuser Lamp	OUT
3	LAMP	Fuser Lamp	OUT

Engine Board
CN401 (to Main Logic Board)

Pin No.	Signal Name	Description	Direction
1	5V	-------	OUT
2	PPRDY	Printer Power Ready	OUT
3	5V	-------	OUT
4	PRDY	Print Ready	OUT
5	5V	-------	OUT
6	CBSY	Command Busy	IN
7	N.C.	-------	-
8	PRINT	Print Request	IN
9	N.C	-------	-
10	SXD	Status Data	OUT
11	GND(5V)	-------	-
12	CCLK	Communication Clock	IN/OUT
13	GND(5V)	-------	-
14	CXD	Command Data	IN
15	GND(5V)	-------	-
16	RST	RESET	IN
17	GND(5V)	-------	-
18	HSYNC	Horizontal Synchronous Signal	OUT
19	GND(5V)	-------	-
20	VIDEO	Video Data	IN
21	GND(5V)	-------	-
22	SBUSY	Status Busy	OUT
23	GND(5V)	-------	-
24	TOP	Top of Paper	OUT

CN402 (to High /Low Voltage Power Supply Unit)

Pin No.	Signal Name	Description	Direction
1	CCTL	Charger Control	OUT
2	NC	-------	-
3	TCTL	Transfer Control	OUT
4	FSRCNT	Fuser Control	OUT
5	DBPWM	Development Bias PWM Signal	OUT
6	GND(5V)	-------	-
7	GND(5V)	-------	-
8	24V	-------	OUT
9	24V	-------	OUT
10	GND(5V)	-------	-
11	GND(5V)	-------	-
12	5V	-------	IN
13	5V	-------	IN
14	5V	-------	IN
15	GND(24V)	-------	-
16	GND(24V)	-------	-
17	GND(24V)	-------	-
18	24V IN	-------	IN
19	24V IN	-------	IN
20	24V IN	-------	IN

CN403 (to Paper Feed Solenoid)

Pin No.	Signal Name	Description	Direction
1	24V	-------	OUT
2	PFCTL	Paper Feed Control	OUT

CN404 (to Main Motor)

Pin No.	Signal Name & Description	Direction
1	MOTOR A	OUT
2	MOTOR $\bar{A}$	OUT
3	MOTOR B	OUT
4	MOTOR $\bar{B}$	OUT

CN406 (to Polygon Scaner)

Pin No.	Signal Name	Description	Direction
1	24V	----------	OUT
2	GND(24V)	----------	-
3	SNRCTL	Scanner Control	OUT
4	SNRLK	Scanner Lock	IN
5	SNRCLK	Scanner Clock	OUT

CN407 (to LD Board)

Pin No.	Signal Name	Description	Direction
1	5V(LD)	----------	OUT
2	LDON	LD Light Enable	OUT
3	GND(5V)	----------	-
4	VIDEO	Video Signal	OUT
5	GND(5V)	----------	-
6	HSYNC	Horizontal Synchronous Signal	IN
7	NC	----------	-

CN408 (Thermistor)

Pin No.	Signal Name	Description	Direction
1	5V	-------	-
2	TH	Thermistor	IN

Display Panel
CN501 (Controller Board)

Pin No.	Signal Name	Description	Direction
1	GND	------	-
2	ERROR LED	ERROR LED	IN
3	READY LED	READY LED	IN
4	KEY	PRINT/RESET KEY	OUT
5	GND	------	-
6	P.UNIT LED	Process Unit LED	IN
7	GND	------	-

Main Motor
(to Engine Board)

Pin No.	Signal Name & Description	Direction
1	MOTOR $\overline{B}$	IN
2	MOTOR B	IN
3	MOTOR $\overline{A}$	IN
4	MOTOR A	IN

Polygon Scanner
(to Engine Board)

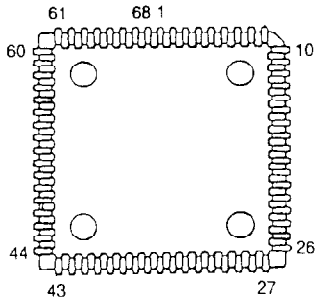
Pin No.	Signal Name	Description	Direction
1	24V	-------	IN
2	GND(24V)	-------	-
3	$\overline{SNRCTL}$	Scanner Control	IN
4	$\overline{SNRLK}$	Scanner Lock	OUT
5	SNRCLK	Scanner Clock	IN

LD Board
(to Engine Board)

Pin No.	Signal Name	Description	Direction
1	NC	----------	-
2	$\overline{HSYNC}$	Horizontal Synchronous Singal	OUT
3	GND(5V)	----------	-
4	$\overline{VIDEO}$	----------	IN
5	GND(5V)	----------	-
6	$\overline{LDON}$	LD Light Enable	IN
7	5V(LD)	----------	IN

5.7 Component Reference Guide

IC1 (CPU)



[BOTTOM VIEW]

Pin No.	Symbol	In/Out	Function
1	HOLDA	OUT	Hold Acknowledge
2	HBE	OUT	High Byte Enable
3	VCCIO	---	+5V
4	SPC	IN/OUT	N.C.
5	ADS	OUT	Address Strobe
6	DDIN	OUT	Data Direction
7	PFS		N.C.
8	ST3	OUT	Bus Cycle Status
9	ST2	OUT	Bus Cycle Status
10	VSSIO	---	Ground
11	ST1	OUT	Bus Cycle Status
12	ST0	OUT	N.C.
13	ILO	OUT	N.C.
14	NMI	IN	Non Maskable Interrupt
15	INT	IN	Interrupt
16	U/S	OUT	N.C.
17	BPU	OUT	BPU Cycle
18	RESERVED	---	N.C.
19	RESERVED	---	N.C.
20	VCCL	---	+5V
21	A23	OUT	Address Bus
22	A22	OUT	Address Bus

Pin No.	Symbol	In/Out	Function
23	A21	OUT	Address Bus
24	A20	OUT	Address Bus
25	A19	OUT	Address Bus
26	VSSHAD	---	Ground
27	A18	OUT	Address Bus
28	A17	OUT	Address Bus
29	A16	OUT	Address Bus
30	VCCAD	---	Ground
31	AD15	IN/OUT	Address & Data Bus
32	AD14	IN/OUT	Address & Data Bus
33	AD13	IN/OUT	Address & Data Bus
34	AD12	IN/OUT	Address & Data Bus
35	AD11	IN/OUT	Address & Data Bus
36	AD10	IN/OUT	Address & Data Bus
37	AD9	IN/OUT	Address & Data Bus
38	AD8	IN/OUT	Address & Data Bus
39	VSSLAD	---	Ground
40	AD7	IN/OUT	Address & Data Bus
41	AD6	IN/OUT	Address & Data Bus
42	AD5	IN/OUT	Address & Data Bus
43	AD4	IN/OUT	Address & Data Bus
44	AD3	IN/OUT	Address & Data Bus
45	AD2	IN/OUT	Address & Data Bus
46	AD1	IN/OUT	Address & Data Bus
47	AD0	IN/OUT	Address & Data Bus
48	PHI1	OUT	N.C.
49	FCLK	OUT	N.C.
50	PH12	OUT	N.C.
51	VCCFCLK	---	+5V
52	VSSFCLK	---	Ground
53	DBE	OUT	Data Buffer Enable
54	VCCCTTL	---	+5V
55	CTTL	OUT	System Clock
56	VSSNTSO	---	Ground
57	RD	OUT	Read Strobe
58	WR	OUT	Write Strobe
59	TSO	OUT	Timing State Output
60	OSCOUT	OUT	N.C.
61	RSTI	IN	Reset Input
62	OSCIN	IN	Clock Input
63	VSSL	---	Ground
64	CWAIT	IN	Continuous Wait
65	WAIT2	IN	Wait State
66	WAIT1	IN	Wait State
67	RSTO	OUT	Reset Output
68	HOLD	IN	Hold Request

IC2 (ASIC 208Pin)

Pin No.	Symbol	In/Out	Function
1	A8	OUT	ROM Address Bus
2	A9	OUT	ROM Address Bus
3	VSS	-	Ground
4	A10	OUT	ROM Address Bus
5	A11	OUT	ROM Address Bus
6	A12	OUT	ROM Address Bus
7	A13	OUT	ROM Address Bus
8	A14	OUT	ROM Address Bus
9	A15	OUT	ROM Address Bus
10	VDD	-	+5V
11			
12	ROM0	OUT	ROM Output Enable
13	ROM1	OUT	ROM Output Enable
14	D15	IN	Data Bus
15	VSS	-	Ground
16	D0	IN	Data Bus
17	D7	IN	Data Bus
18	D8	IN	Data Bus
19	D14	IN	Data Bus
20	D1	IN	Data Bus
21	D6	IN	Data Bus
22	D9	IN	Data Bus
23	D13	IN	Data Bus
24	D2	IN	Data Bus
25	D5	IN	Data Bus
26	VSS	-	Ground
27	VDD	-	+5V
28	D10	IN	Data Bus
29	D12	IN	Data Bus
30	D3	IN	Data Bus
31	D4	IN	Data Bus
32	D11	IN	Data Bus
33	INTNIB	IN	Centronics Select Interrupt
34	NC	OUT	Reserve
35	ORTDET	IN	ORT Detect
36	KEY0	IN	Key Switch
37	NC	OUT	Reserve
38	VSS	-	Ground
39	NC	OUT	Reserve
40	VCLKCNT	OUT	Video Clock Control
41	NC	OUT	Reserve
42	NC	OUT	Reserve
43	VDD	-	+5V
44	NC	OUT	Reserve
45	LED2	OUT	READY LED
46	ENRY	IN	Printer Ready
47	ENGRQ	IN	Printer Status Busy
48	HSYNC	IN	Horizontal Synchronous Signal
49	TOP	IN	Top of Page Signal
50	VSS	-	Ground
51	SSCKIN	IN/OUT	Printer Communication Clock
52	SSDIN	IN	Printer Status Data

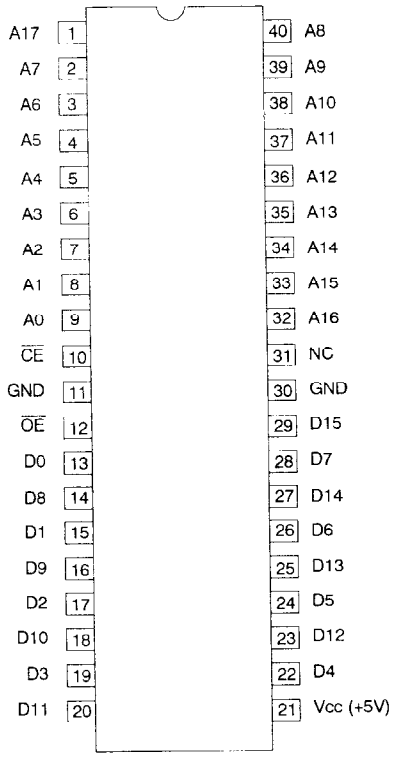
Pin No.	Symbol	In/Out	Function
53	PWRY	IN	Printer Power Ready
54	LED3	OUT	ERROR LED
55	PRNTRQ	OUT	PRINT Signal
56	CONRQ	OUT	Controller Command Busy
57	SSDOUT	OUT	Controller Command Data
58	A16	IN	Address Bus
59	A17	IN	Address Bus
60	VSS	-	Ground
61	VDD	-	+5V
62	A18	IN	Address Bus
63	A19	IN	Address Bus
64	A20	IN	Address Bus
65	A21	IN	Address Bus
66	A22	IN	Address Bus
67	A23	IN	Address Bus
68	NBPU	IN	BPU Cycle
69	ST1	IN	Bus Cycle Status
70	ST2	IN	Bus Cycle Status
71	ST3	IN	Bus Cycle Status
72	VSS	-	Ground
73	ADS	IN	Address Strobe
74	DDIN	IN	Data Detection
75	HBE	IN	High Byte Enable
76	HOLDA	IN	Hold Acknowledge
77	INT	OUT	Interrupt
78	HOLD	OUT	Hold
79	VDD	-	+5V
80	WAIT1	OUT	Wait State
81	WAIT2	OUT	Wait State
82	CWAIT	OUT	Continuous Wait
83	TSO	IN	Timing Status
84	RSTO	IN	Rest
85	VSS		Ground
86	CTTL	IN	System Clock
87	WR	IN	Write Strobe
88	RD	IN	Read Strobe
89	DBE	IN	Data Buffer Enable
90	AD0	IN/OUT	Address & Data Bus
91	AD1	IN/OUT	Address & Data Bus
92	AD2	IN/OUT	Address & Data Bus
93	AD3	IN/OUT	Address & Data Bus
94	AD4	IN/OUT	Address & Data Bus
95	AD5	IN/OUT	Address & Data Bus
96	VSS	-	Ground
97	VDD	-	+5V
98	REFCLK	IN/OUT	Refresh Clock
99	VDO	OUT	Video Signal
100	LED4	OUT	Process Unit LED
101	AD6	IN/OUT	Address & Data Bus
102	AD7	IN/OUT	Address & Data Bus
103	AD8	IN/OUT	Address & Data Bus
104	AD9	IN/OUT	Address & Data Bus

Pin No.	Symbol	In/Out	Function
105	AD10	IN/OUT	Address & Data Bus
106	AD11	IN/OUT	Address & Data Bus
107	VSS	-	Ground
108	AD12	IN/OUT	Address & Data Bus
109	AD13	IN/OUT	Address & Data Bus
110	AD14	IN/OUT	Address & Data Bus
111	AD15	IN/OUT	Address & Data Bus
112	PWL	OUT	DRT Control
113	LSEST	OUT	DRT Control
114	VDD	-	+5V
115	ESTCS1	OUT	ORT Chip Select
116	ESTCS2	OUT	ORT Chip Select
117	VCLKSEL	IN	Video Clock Select
118	VCLK	IN	Video Clock
119	VSS	-	Ground
120	OSCDOTI	IN	OSC
121	OSCDOTO	IN/OUT	OSC
122	TESTCK1	IN	Test Clock (Ground)
123	HSYSEL	IN	+5V
124	DRMD15	IN/OUT	DRAM Data Bus
125	DRMD14	IN/OUT	DRAM Data Bus
126	DRMD13	IN/OUT	DRAM Data Bus
127	DRMD12	IN/OUT	DRAM Data Bus
128	DRMD11	IN/OUT	DRAM Data Bus
129	DRMD10	IN/OUT	DRAM Data Bus
130	VSS	-	Ground
131	VDD	-	+5V
132	STDRAS1	OUT	Reserve (N.C)
133	STDRAS2	OUT	Reserve (N.C)
134			
135			
136	DRMD9	IN/OUT	DRAM Data Bus
137	DRMD8	IN/OUT	DRAM Data Bus
138	DRMD7	IN/OUT	DRAM Data Bus
139	DRMD6	IN/OUT	DRAM Data Bus
140	DRMD5	IN/OUT	DRAM Data Bus
141	DRMD4	IN/OUT	DRAM Data Bus
142	VSS	-	Ground
143	DRMD3	IN/OUT	DRAM Data Bus
144	DRMD2	IN/OUT	DRAM Data Bus
145	DRMD1	IN/OUT	DRAM Data Bus
146	DRMD0	IN/OUT	DRAM Data Bus
147	VDD	-	+5V
148	DRA9	OUT	DRAM Address Bus
149	DRA8	OUT	DRAM Address Bus
150	DRA7	OUT	DRAM Address Bus
151	DRA6	OUT	DRAM Address Bus
152	DRA5	OUT	DRAM Address Bus
153	DRA4	OUT	DRAM Address Bus
154	VSS	-	Ground
155	DRA3	OUT	DRAM Address Bus
156	DRA2	OUT	DRAM Address Bus

Pin No.	Symbol	In/Out	Function
157	DRA1	OUT	DRAM Address Bus
158	DRA0	OUT	DRAM Address Bus
159	CASU	OUT	DRAM CAS High
160	CASL	OUT	DRAM CAS Low
161	STDRAS	OUT	DRAM RAS
162	OPRAS1	OUT	Option DRAM RAS
163	OPRAS2	OUT	Option DRAM RAS
164	VSS	-	Ground
165	VDD	-	+5V
166	WE	OUT	DRAM Write Enable
167	OE	OUT	DRAM Output Enable
168	NC	OUT	Reserve (N.C)
169	NC	OUT	Reserve (N.C)
170	NC	OUT	Reserve (N.C)
171	NC	OUT	Reserve (N.C)
172	NC	OUT	Reserve (N.C)
173	NC	OUT	Reserve (N.C)
174	TESTCK2	IN	Test Clock (Ground)
175	VSS	IN	Ground
176	VSS	-	Ground
177	VSS	IN	Ground
178	REFTST	IN	Test Signal (Ground)
179	EEPDAT	IN/OUT	EEPROM Data
180	EEPSK	OUT	EEPROM Clock
181	SLCTIN	IN	Centronics Select In
182	AUTOFD	IN	Centronics Select Autofd
183	VDD	-	+5V
184	ERR	OUT	Centronics Error
185	SLCT	OUT	Centronics Select
186	PO	OUT	Centronics Paper Out
187	BUSY	OUT	Centronics Busy
188	ACK	OUT	Centronics Ack
189	VSS	-	Ground
190	STB	IN	Centronics Strobe
191	PRIME	IN	Centronics Prime
192	CTRD7	IN	Centronics Data Bus
193	CTRD6	IN	Centronics Data Bus
194	CTRD5	IN	Centronics Data Bus
195	CTRD4	IN	Centronics Data Bus
196	CTRD3	IN	Centronics Data Bus
197	A1	OUT	ROM Address Bus
198	A2	OUT	ROM Address Bus
199	A3	OUT	ROM Address Bus
200	VSS	-	Ground
201	VDD	-	+5V
202	CTRD2	IN	Centronics Data Bus
203	CTRD1	IN	Centronics Data Bus
204	CTRD0	IN	Centronics Data Bus
205	A4	OUT	ROM Address Bus
206	A5	OUT	ROM Address Bus
207	A6	OUT	ROM Address Bus
208	A7	OUT	ROM Address Bus

KX-P6150

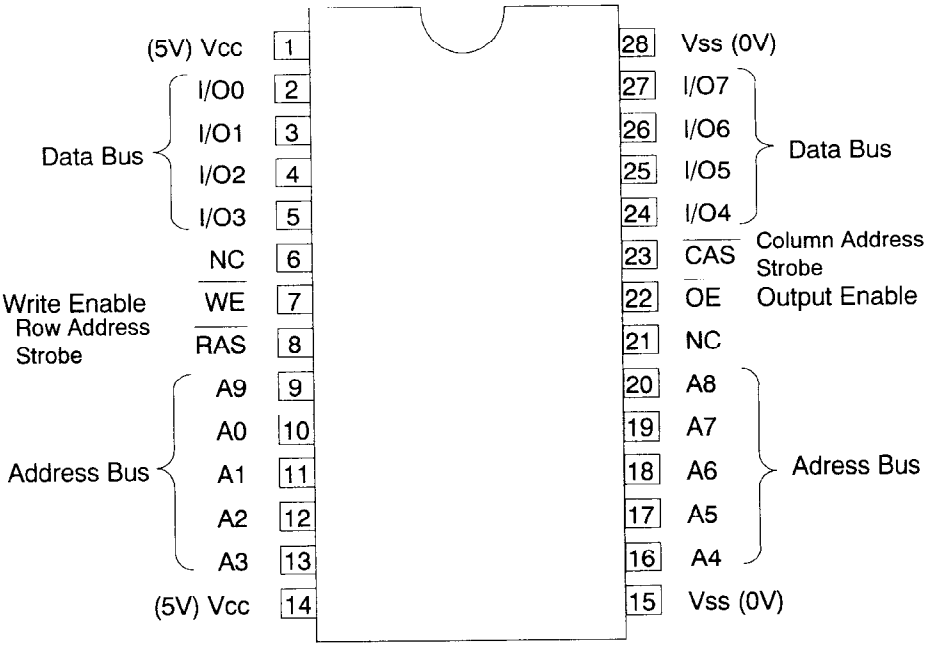
IC3,4



Pin No.	Symbol	In/Out	Function
1	A17	IN	Address Bus
2	A7	IN	Address Bus
3	A6	IN	Address Bus
4	A5	IN	Address Bus
5	A4	IN	Address Bus
6	A3	IN	Address Bus
7	A2	IN	Address Bus
8	A1	IN	Address Bus
9	A0	IN	Address Bus
10	$\overline{CE}$	IN	Chip Enable
11	GND	-	Ground
12	$\overline{OE}$	IN	Output Enable
13	D0	OUT	Data Bus
14	D8	OUT	Data Bus
15	D1	OUT	Data Bus
16	D9	OUT	Data Bus
17	D2	OUT	Data Bus
18	D10	OUT	Data Bus
19	D3	OUT	Data Bus
20	D11	OUT	Data Bus

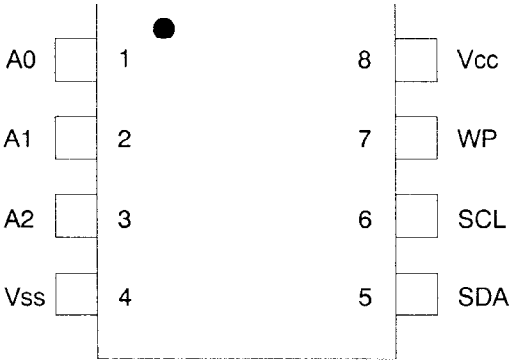
Pin No.	Symbol	In/Out	Function
21	Vcc	-	+5V Power Supply
22	D4	OUT	Data Bus
23	D12	OUT	Data Bus
24	D5	OUT	Data Bus
25	D13	OUT	Data Bus
26	D6	OUT	Data Bus
27	D14	OUT	Data Bus
28	D7	OUT	Data Bus
29	D15	OUT	Data Bus
30	GND	-	Ground
31	NC	-	
32	A16	-	Address Bus
33	A15	IN	Address Bus
34	A14	IN	Address Bus
35	A13	IN	Address Bus
36	A12	IN	Address Bus
37	A11	IN	Address Bus
38	A10	IN	Address Bus
39	A9	IN	Address Bus
40	A8	IN	Address Bus

IC5,6 (DRAM)



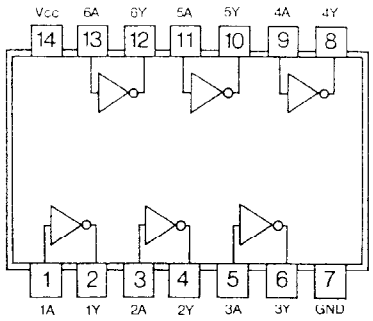
NC : Not Connected

IC8

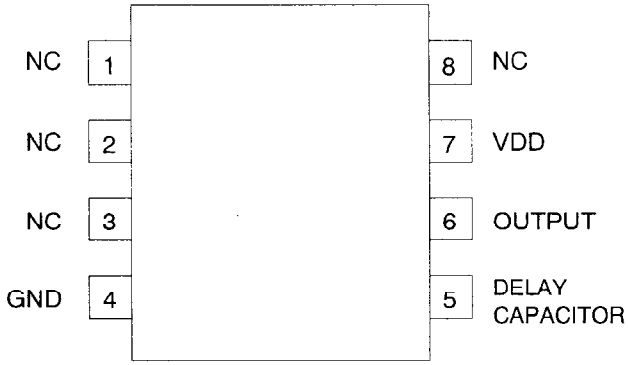


Pin No.	Symbol	In/Out	Function
1	A0	IN	N.C
2	A1	IN	N.C
3	A2	IN	N.C
4	Vss	-	Ground
5	SDA	IN/OUT	Serial Address /Data
6	SCL	IN	Serial Clock
7	WP	IN	Write Protect
8	Vcc	-	+5V

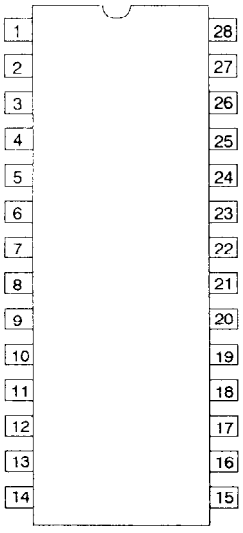
IC9,11



IC10



IC12 (ORT)



Pin No.	Symbol	In/Out	Function
1	D5	IN/OUT	Data Bus
2	D4	IN/OUT	Data Bus
3	D3	IN/OUT	Data Bus
4	D2	IN/OUT	Data Bus
5	D1	IN/OUT	Data Bus
6	D0	IN/OUT	Data Bus
7	VD0	IN	Video Data In
8	$\overline{PWL}$	IN	Video Data Strobe
9	LS	IN	Horizontal SYNC
10	SYNCON	IN	Laser On
11	$\overline{CS1}$	IN	Chip Select
12	$\overline{CS2}$	IN	Chip Select
13	$\overline{RST}$	IN	Reset
14	GND	-	Ground

Pin No.	Symbol	In/Out	Function
15	VOUT	OUT	Video Data Out
16	OE	IN	Use In Test Mode
17	MTEST	IN	Memory Test
18	VCLK	OUT	Video Clock
19	LTEST	IN	Logic Test
20	RD5	OUT	Use In Test Mode
21	RD4	IN/OUT	Use In Test Mode
22	NC	OUT	Use In Test Mode
23	RD2	OUT	Use In Test Mode
24	RD1	OUT	Use In Test Mode
25	RD0	OUT	Use In Test Mode
26	OHF	IN	EST Forced ON
27	OSCIN	IN	Basic Clock IN
28	VDD	-	+5V Power Supply

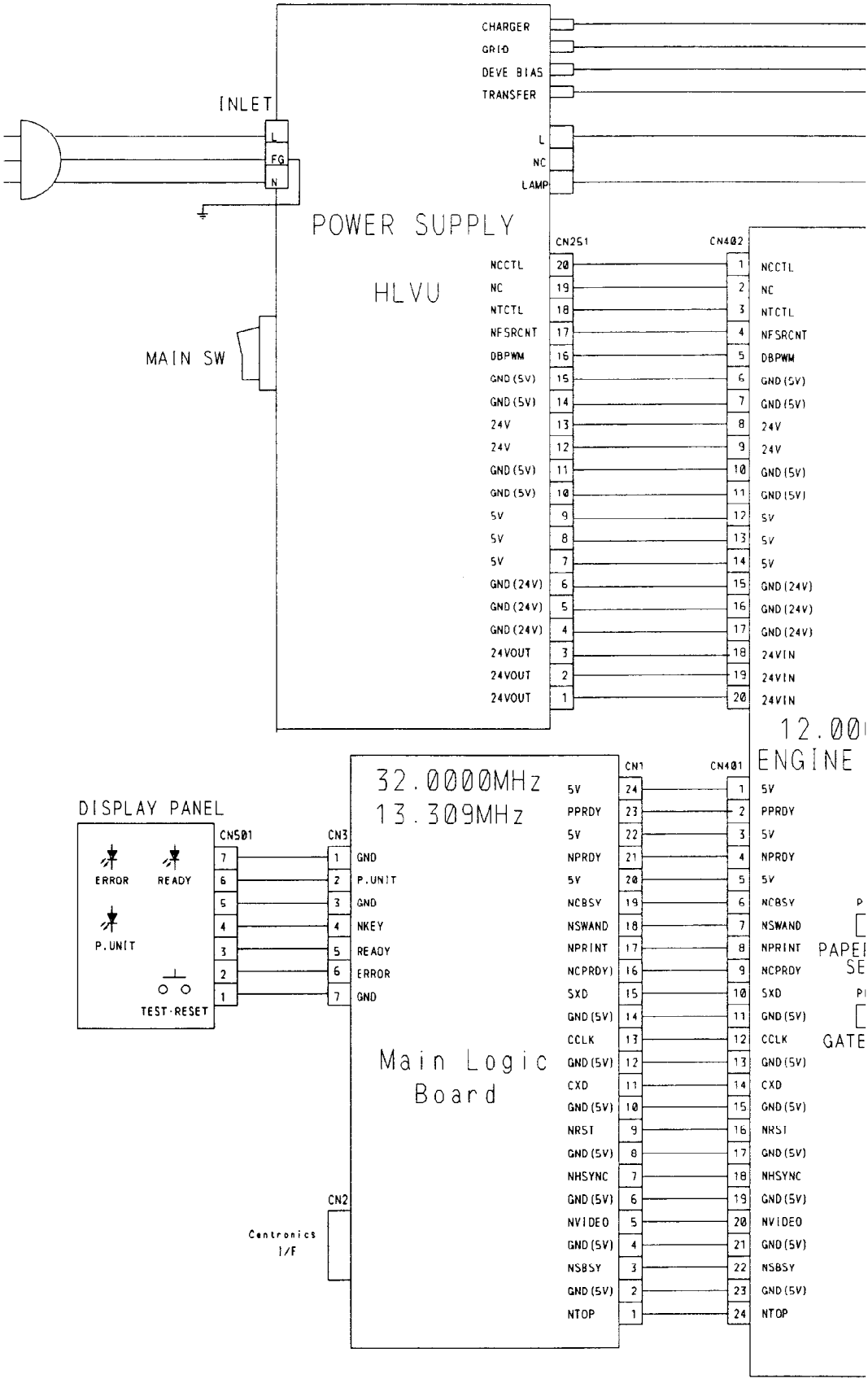
IC401 (ENGINE CPU I/0 LIST)

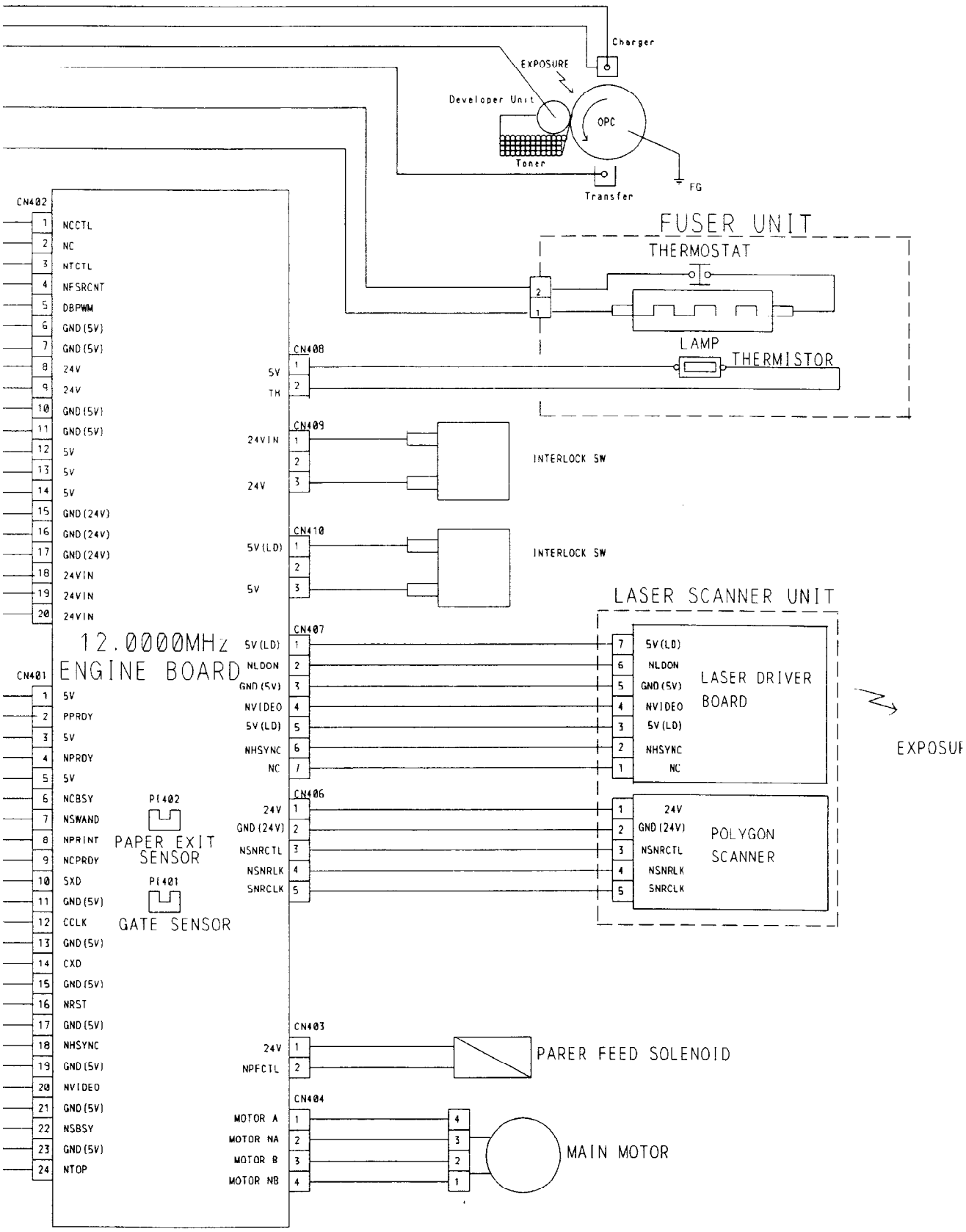
Pin No.	Symbol	In/Out	Function
1	P03	OUT	LDON (LD Light Enable)
2	P04	OUT	TCTL (Transfer Control)
3	P05	OUT	CCTL (Charger Control)
4	P06	OUT	CCHG (Charger Current Change)
5	P07	OUT	PFCTL (Paper Feed Control)
6	P67	OUT	SBUSY (Status Busy)
7	P66	OUT	TOP (Top of Paper)
8	P65	-	N.C
9	P64	OUT	RD (ROM Read)
10	P63	OUT	FSRCTL (Fuser Control)
11	P62	OUT	SK (EEPROM Data Clock)
12	P61	-	N.C
13	P60		N.C
14	RES	IN	RESET
15	X2	IN	Crystal
16	X1	IN	Crystal
17	VSS	-	Ground
18	P57	-	N.C
19	P56	OUT	A14 (ROM Address)
20	P55	OUT	A13 (ROM Address)
21	P54	OUT	A12 (ROM Address)
22	P53	OUT	A11 (ROM Address)
23	P52	OUT	A10 (ROM Address)
24	P51	OUT	A9 (ROM Address)
25	P50	OUT	A8 (ROM Address)
26	P47	IN/OUT	AD7 (ROM Address/Data)
27	P46	IN/OUT	AD6 (ROM Address/Data)
28	P45	IN/OUT	AD5 (ROM Address/Data)
29	P44	IN/OUT	AD4 (ROM Address/Data)
30	P43	IN/OUT	AD3 (ROM Address/Data)
31	P42	IN/OUT	AD2 (ROM Address/Data)
32	VSS		Ground
33	P41	IN/OUT	AD1 (ROM Address/Data)
34	P40	IN/OUT	AD0 (ROM Address/Data)
35	ASTB	OUT	Address Strobe
36	P20	-	N.C
37	P21	IN	HSYNC (Horizontal Sync)
38	P22	IN	SNRLK (Scanner Stability Lock)
39	P23	IN	GATE (Gate Sensor)
40	P24	IN	EXIT (Exit Sensor)
41	P25	-	GND
42	P26	-	N.C
43	P27	IN	CXD (Command Data)
44	P30	-	N.C
45	P31	OUT	SNRCTL (Scanner Control)
46	P32	IN/OUT	CCLK (Communication Clock)
47	P33	OUT	SXD (Status Data)
48	EA	IN	External Access (ROM etc.)
49	VDD		5V Supply
50	AVSS		GND for A/D Converter

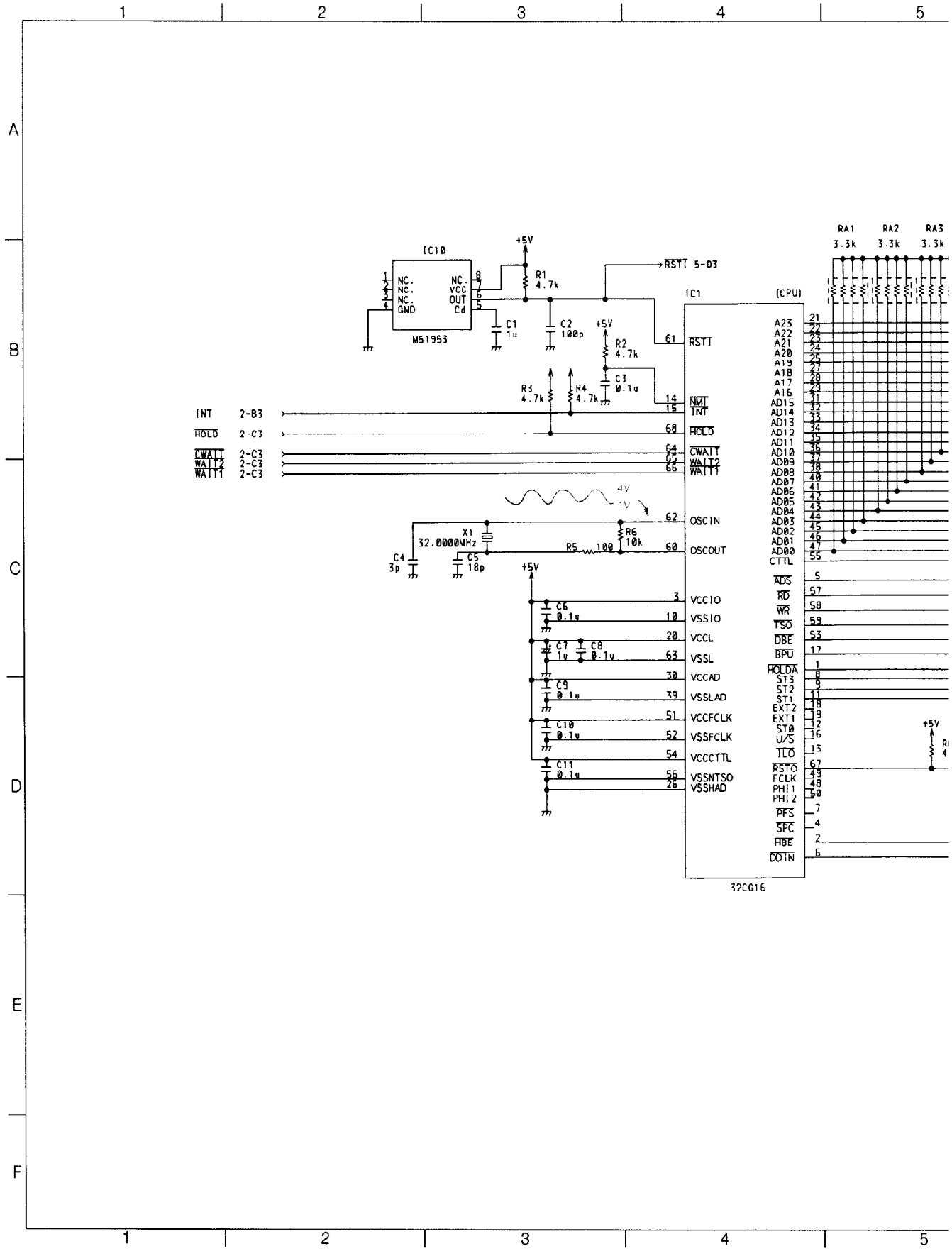
Pin No.	Symbol	In/Out	Function
51	AVREF		Reference Voltage for A/D Converter
52	AN5	IN	PRINT (Print Request)
53	AN4	IN	CBUSY (Command Busy)
54	AN3	IN	P.U (Process Unit Detect)
55	AN2	-	N.C
56	AN1	IN	TH (Thermistor)
57	AN0	IN	DOPEN (Door Open)
58	P34	OUT	VON (Video On for APC/Hsync)
59	P35	OUT	PRDY (Print Ready)
60	P36	OUT	DBPWM (Deve Bias PWM Signal)
61	P37	OUT	SNRCLK (Scanner Clock)
62	P00	OUT	MOTOR A (Motor A Signal)
63	P01	OUT	MOTOR B (Motor B Signal)
64	P02	OUT	MCTL (Motor Control)

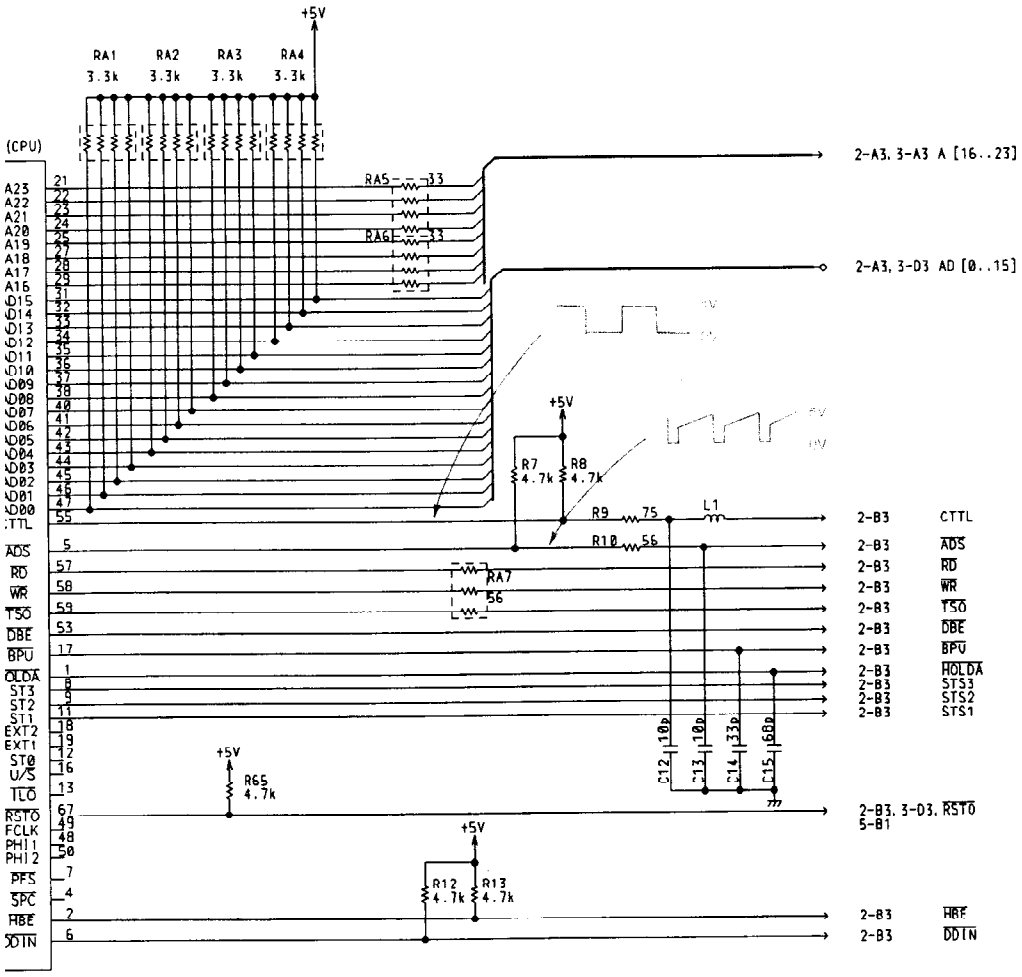
5.8 Schematic Diagram

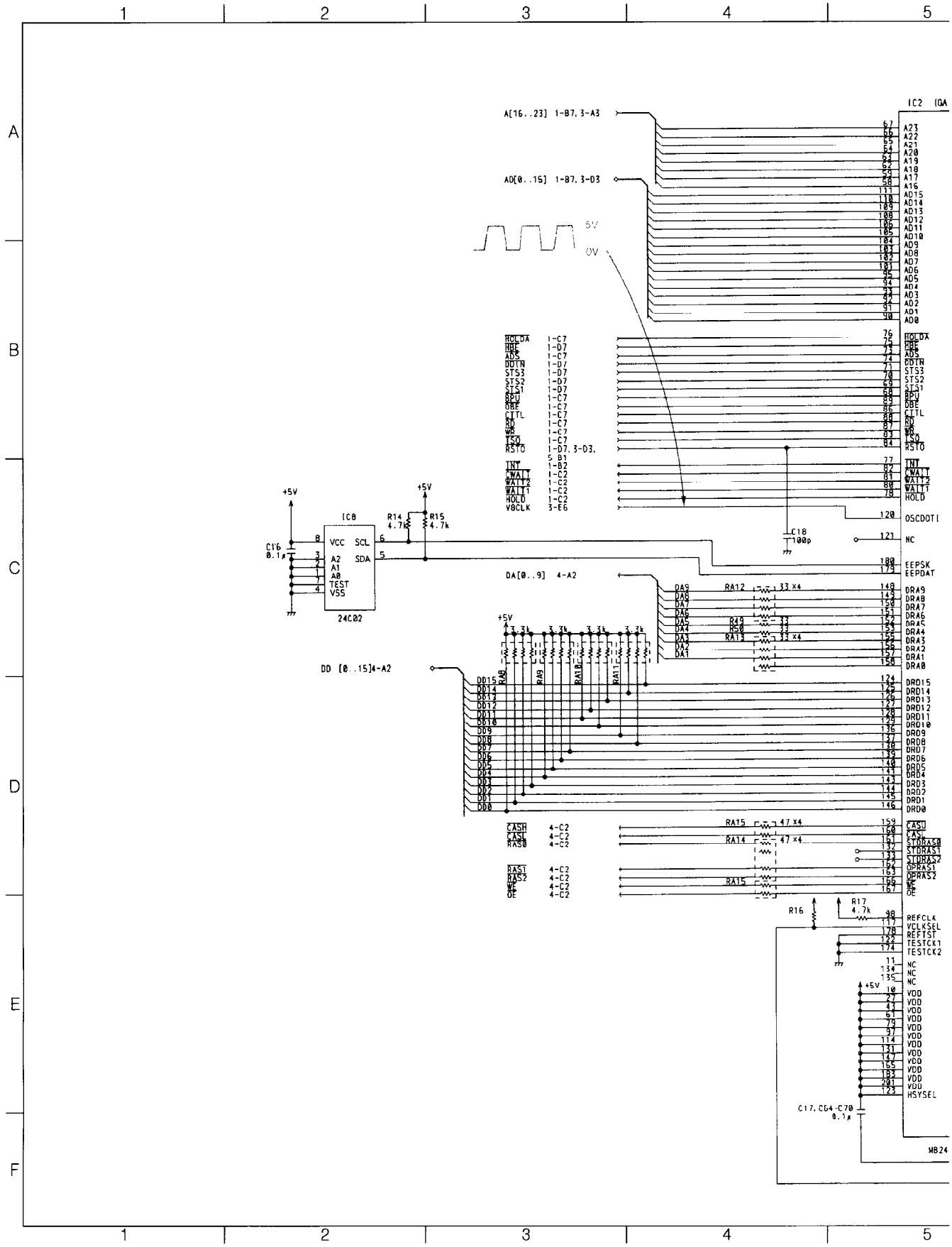
5.8.1 Connection Diagram

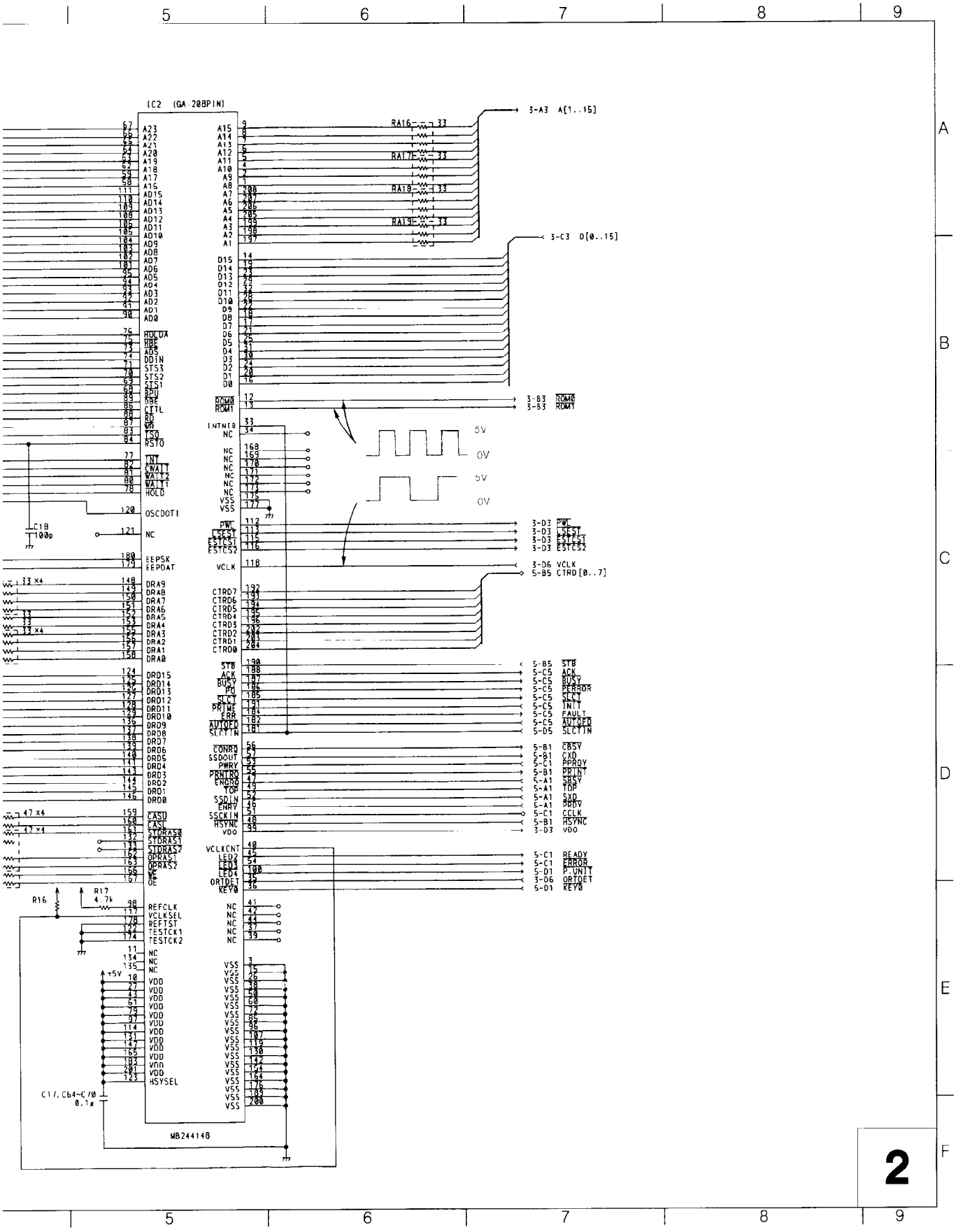


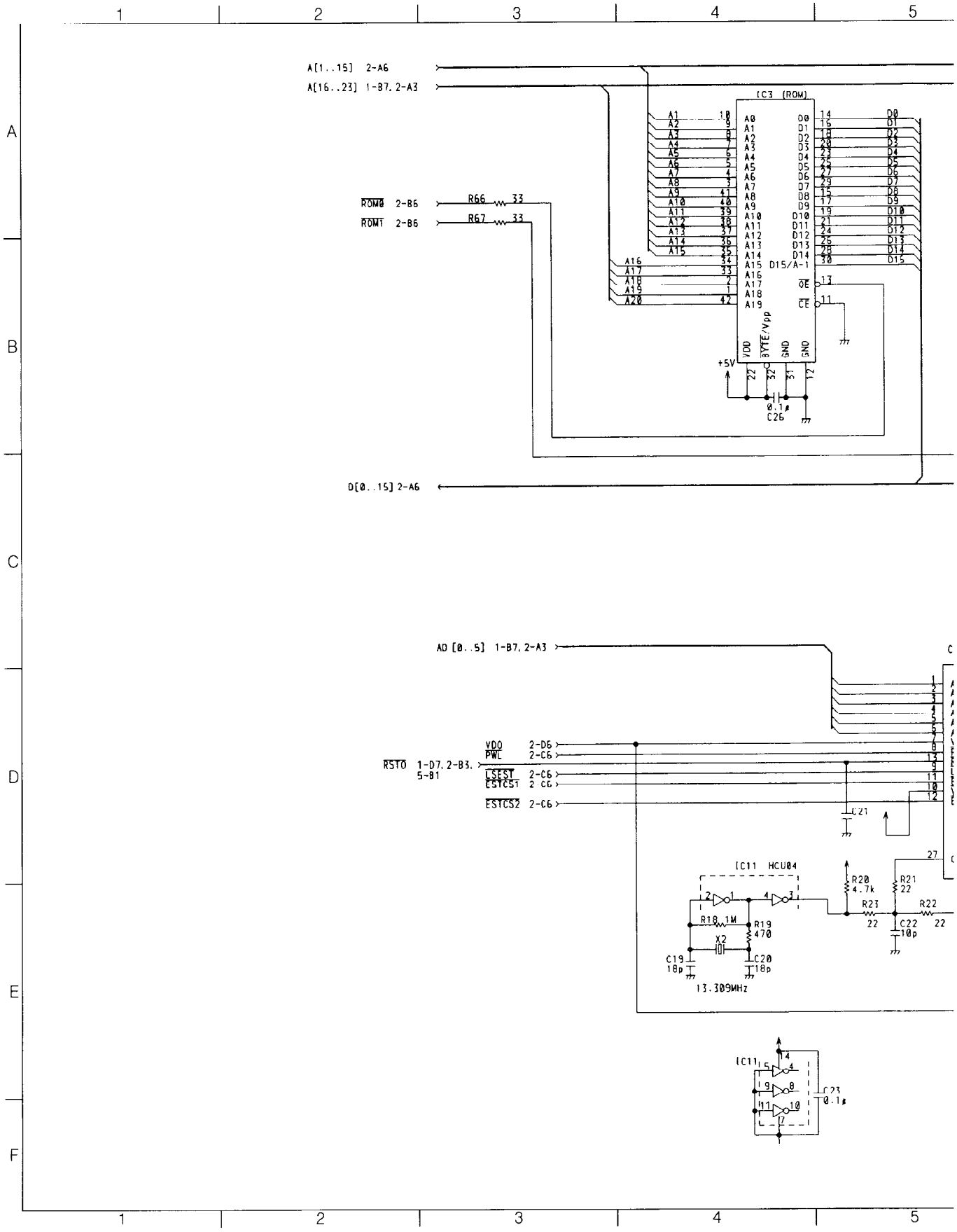

Charger
EXPOSURE
Developer Unit
OPC
Toner
Transfer
FG
FUSER UNIT
THERMOSTAT
LAMP
THERMISTOR
CN402
NCCTL
NC
NTCTL
NFSRCNT
DBPWM
GND(5V)
GND(5V)
24V
24V
GND(5V)
GND(5V)
5V
5V
5V
GND(24V)
GND(24V)
GND(24V)
24VIN
24VIN
24VIN
CN408
5V
TH
CN409
24VIN
24V
INTERLOCK SW
CN410
5V(LD)
5V
INTERLOCK SW
LASER SCANNER UNIT
12.0000MHz
ENGINE BOARD
CN407
5V(LD)
NLDON
GND(5V)
NVIDEO
5V(LD)
NHSYNC
NC
LASER DRIVER BOARD
CN401
5V
PPRDY
5V
NPRDY
5V
NCBSY
NSWAND
NPRINT
NCPRDY
SXD
GND(5V)
CCLK
GND(5V)
CXD
GND(5V)
NRST
GND(5V)
NHSYNC
GND(5V)
NVIDEO
GND(5V)
NSBSY
GND(5V)
NTOP
PI402
PAPER EXIT SENSOR
PI401
GATE SENSOR
CN406
24V
GND(24V)
NSNRCTL
NSNRLK
SNRCLK
POLYGON SCANNER
EXPOSUR
CN403
24V
NPFCTL
PARER FEED SOLENOID
CN404
MOTOR A
MOTOR NA
MOTOR B
MOTOR NB
MAIN MOTOR

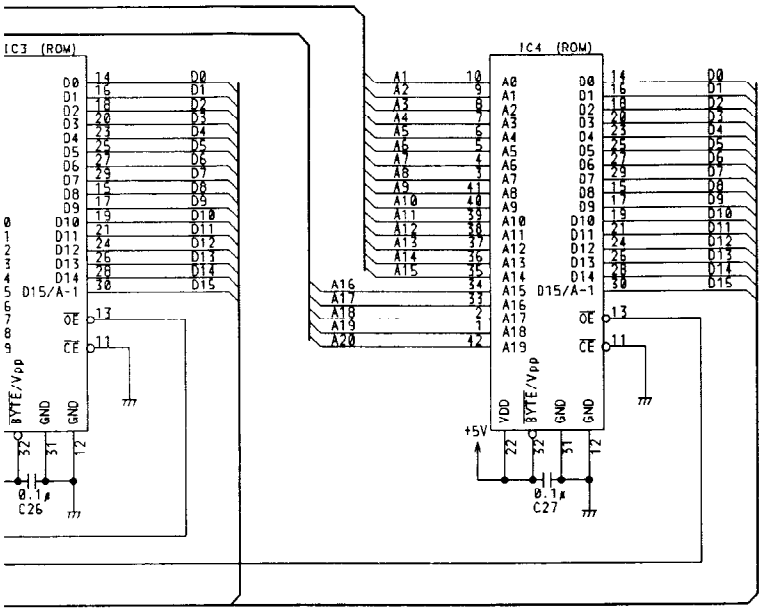

IC10
M51953
NC.
NC.
NC.
GND
VCC
OUT
Cd
+5V
R1 4.7k
C1 1u
C2 100p
R2 4.7k
C3 0.1u
R3 4.7k
R4 4.7k
RSTT 5-D3
IC1
(CPU)
RSTT
NMI
INT
HOLD
CWAIT
WAIT2
WAIT1
INT 2-B3
HOLD 2-C3
CWAIT 2-C3
WAIT2 2-C3
WAIT1 2-C3
4V
1V
X1
32.0000MHz
C4 3p
C5 18p
R5 100
R6 10k
OSCIN
OSCOUT
VCCIO
VSSIO
VCCL
VSSL
VCCAD
VSSLAD
VCCFCLK
VSSFCLK
VCCCTTL
VSSNTSO
VSSHAD
C6 0.1u
C7 1u
C8 0.1u
C9 0.1u
C10 0.1u
C11 0.1u
RA1 3.3k
RA2 3.3k
RA3 3.3k
A23
A22
A21
A20
A19
A18
A17
A16
AD15
AD14
AD13
AD12
AD11
AD10
AD09
AD08
AD07
AD06
AD05
AD04
AD03
AD02
AD01
AD00
CTTL
ADS
RD
WR
TSO
DBE
BPU
HOLDA
ST3
ST2
ST1
EXT2
EXT1
ST0
U/S
TLO
RSTO
FCLK
PHI1
PHI2
PFS
SPC
HBE
DOTN
32CG16

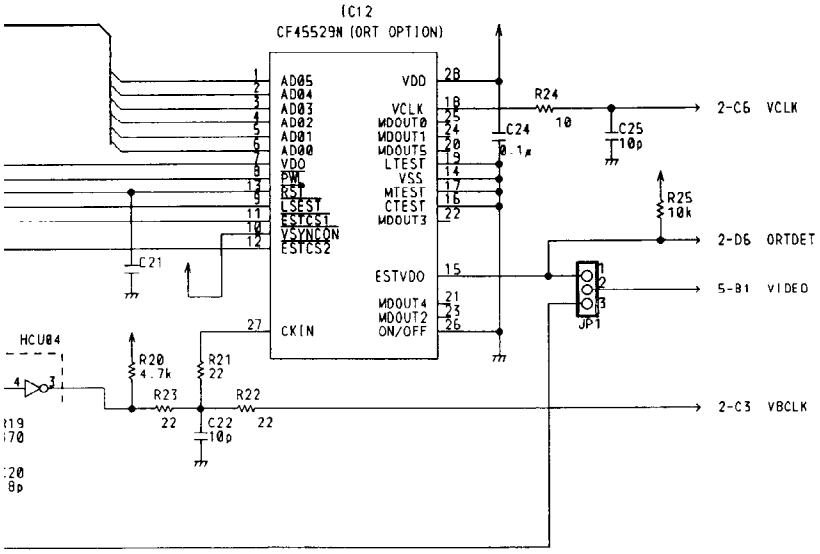

+5V
RA1 3.3k
RA2 3.3k
RA3 3.3k
RA4 3.3k
(CPU)
A23
A22
A21
A20
A19
A18
A17
A16
D15
D14
D13
D12
D11
D10
D09
D08
D07
D06
D05
D04
D03
D02
D01
D00
TTL
ADS
RD
WR
TSO
DBE
BPU
HLDA
ST3
ST2
ST1
EXT2
EXT1
ST0
U/S
TLO
RSTO
FCLK
PH11
PH12
PFS
SPC
HBE
DDTN
RA5 33
RA6 33
RA7 56
R7 4.7k
R8 4.7k
R9 75
R10 56
L1
C12 10p
C13 10p
C14 33p
C15 68p
R65 4.7k
R12 4.7k
R13 4.7k
2-A3, 3-A3 A [16..23]
2-A3, 3-D3 AD [0..15]
2-B3 CTTL
2-B3 ADS
2-B3 RD
2-B3 WR
2-B3 TSO
2-B3 DBE
2-B3 BPU
2-B3 HOLDA
2-B3 ST3
2-B3 ST2
2-B3 ST1
2-B3, 3-D3, RSTO
5-B1
2-B3 HBE
2-B3 DDTN

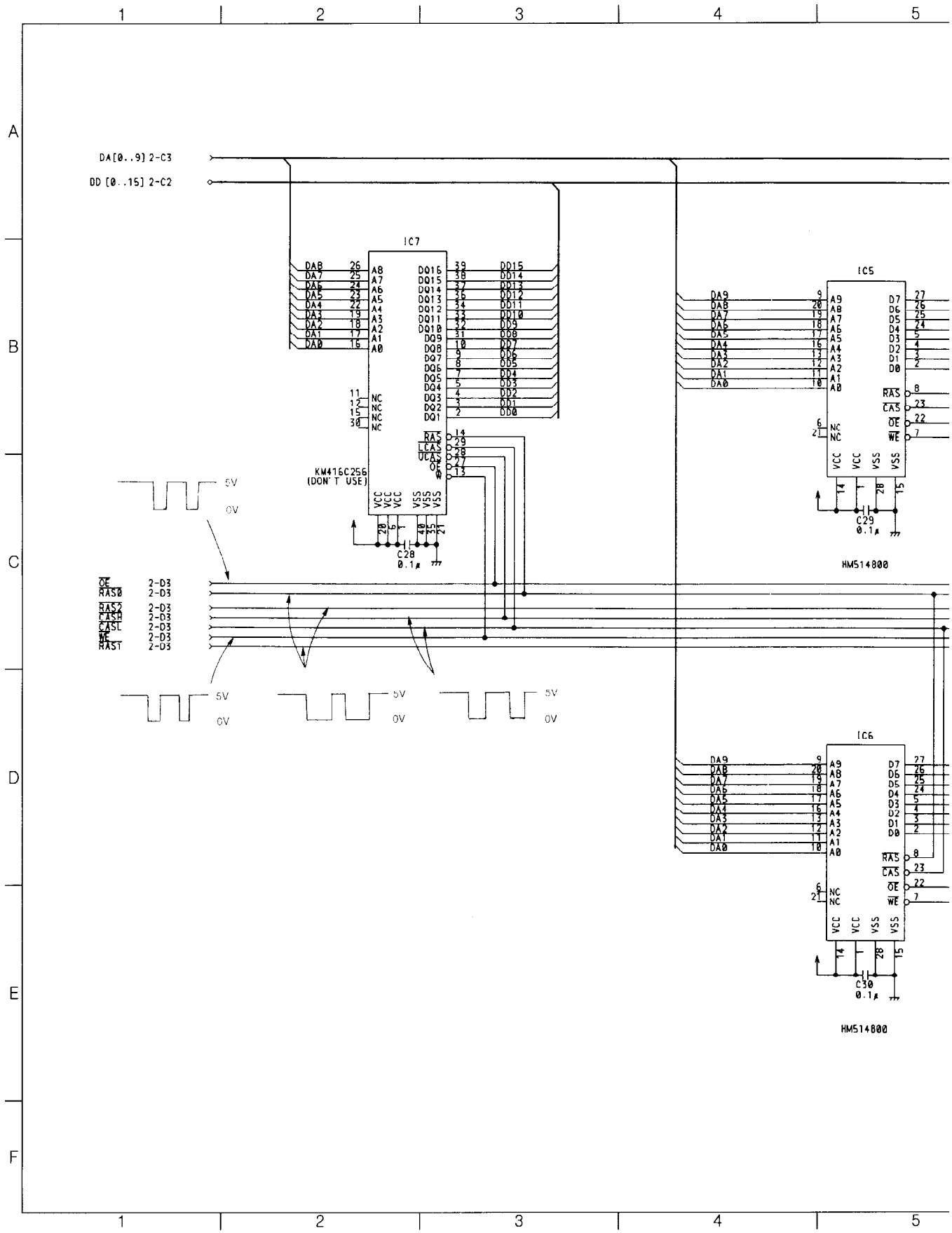

IC2 (GA
A[16..23] 1-B7, 3-A3
AD[0..15] 1-B7, 3-D3
5V
0V
A23
A22
A21
A20
A19
A18
A17
A16
AD15
AD14
AD13
AD12
AD11
AD10
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
HOLDA 1-C7
HBE 1-D7
ADS 1-C7
DDTN 1-D7
STS3 1-D7
STS2 1-D7
STS1 1-D7
BPU 1-C7
DBE 1-C7
CITL 1-C7
RD 1-C7
WR 1-C7
TSQ 1-C7
RSTO 1-D7, 3-D3, 5 B1
INT 1-B2
CWAIT 1-C2
WAIT2 1-C2
WAIT1 1-C2
HOLD 1-C2
V8CLK 3-E6
HOLDA
HBE
ADS
DDTN
STS3
STS2
STS1
BPU
DBE
CITL
RD
WR
TSQ
RSTO
INT
CWAIT
WAIT2
WAIT1
HOLD
OSCDOTI
NC
EEPSK
EEPDAT
+5V
IC8
C16 0.1µ
R14 4.7k
R15 4.7k
VCC
SCL
A2
A1
A0
TEST
VSS
SDA
24C02
C18 100p
DA[0..9] 4-A2
DA9
DA8
DA7
DA6
DA5
DA4
DA3
DA2
DA1
RA12
RA13
33 X4
DRA9
DRA8
DRA7
DRA6
DRA5
DRA4
DRA3
DRA2
DRA1
DRA0
3.3k
RA0
RA9
RA10
RA11
DD [0..15]4-A2
DD15
DD14
DD13
DD12
DD11
DD10
DD9
DD8
DD7
DD6
DD5
DD4
DD3
DD2
DD1
DD0
DRD15
DRD14
DRD13
DRD12
DRD11
DRD10
DRD9
DRD8
DRD7
DRD6
DRD5
DRD4
DRD3
DRD2
DRD1
DRD0
CASH 4-C2
CASL 4-C2
RAS0 4-C2
RAS1 4-C2
RAS2 4-C2
WE 4-C2
OE 4-C2
RA15
RA14
47 X4
CASU
CASL
STDRAS0
STDRAS1
STDRAS2
OPRAS1
OPRAS2
WE
OE
R16
R17 4.7k
REFCLK
VCLKSEL
REFTST
TESTCK1
TESTCK2
NC
NC
NC
VDD
HSYSEL
C17, C64-C70 0.1µ
MB24

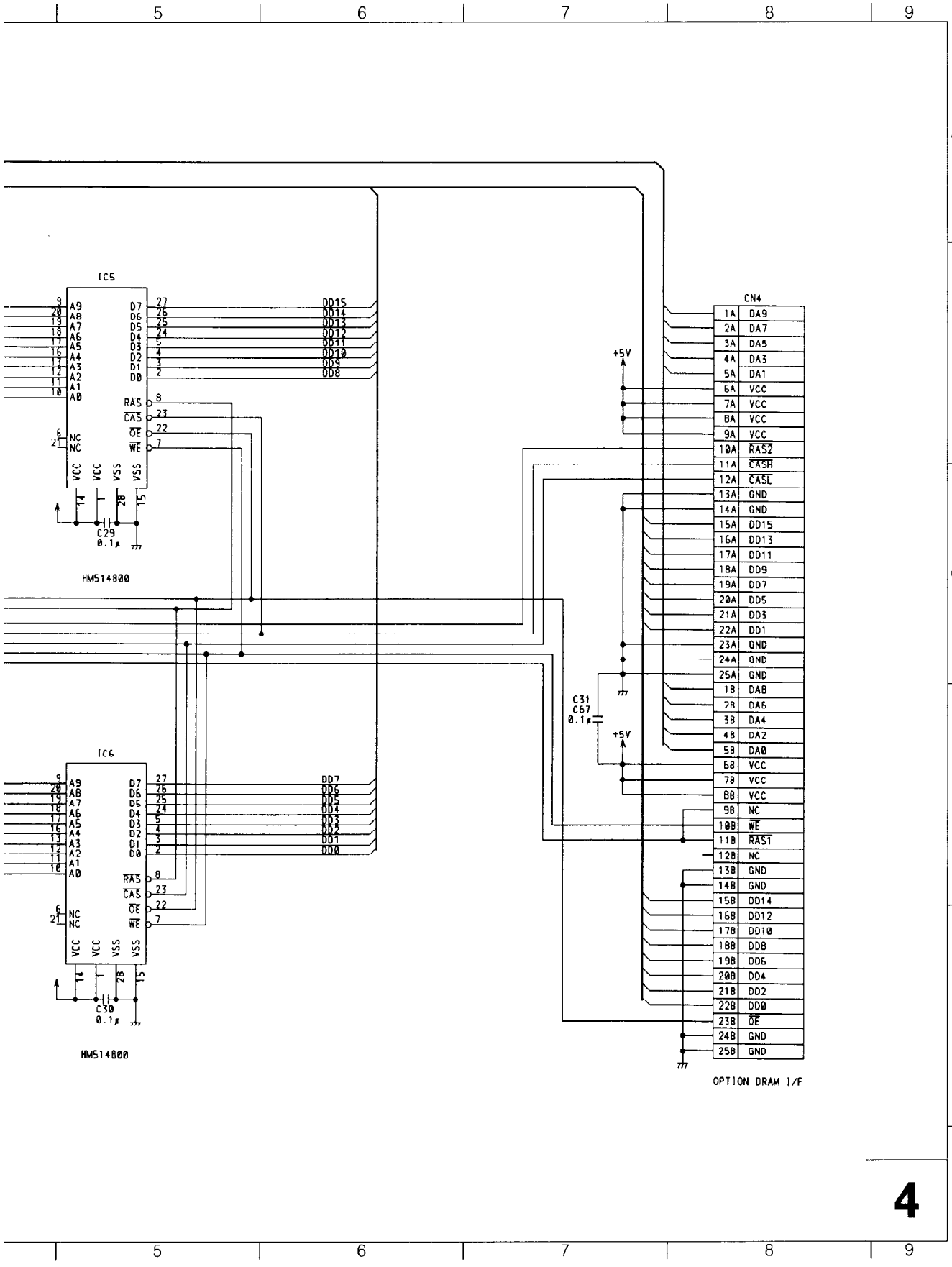

5
6
7
8
9
A
B
C
D
E
F
IC2 (GA-208PIN)
3-A3 A[1..15]
3-C3 D[0..15]
RA16 33
RA17 33
RA18 33
RA19 33
5V
0V
5V
0V
3-83 ROM0
3-83 ROM1
3-D3 PWC
3-D3 CSCST
3-D3 ESTCS1
3-D3 ESTCS2
3-D6 VCLK
5-B5 CTRD[0..7]
5-B5 STB
5-C5 ACK
5-C5 BUSY
5-C5 PERROR
5-C5 SLCT
5-C5 INIT
5-C5 FAULT
5-C5 AUTOFD
5-D5 SLCTIN
5-B1 CBSY
5-B1 CXD
5-C1 PPROY
5-B1 PRIN
5-A1 SRSY
5-A1 TOP
5-A1 SXD
5-A1 SRDY
5-C1 CCLK
5-B1 HSYNC
3-D3 VDO
5-C1 READY
5-C1 ERROR
5-D1 P.UNIT
3-D6 ORTDET
5-D1 KEY0
C18 100p
R16
R17 4.7k
+5V
C17, C64~C70 0.1μ
MB244148
2

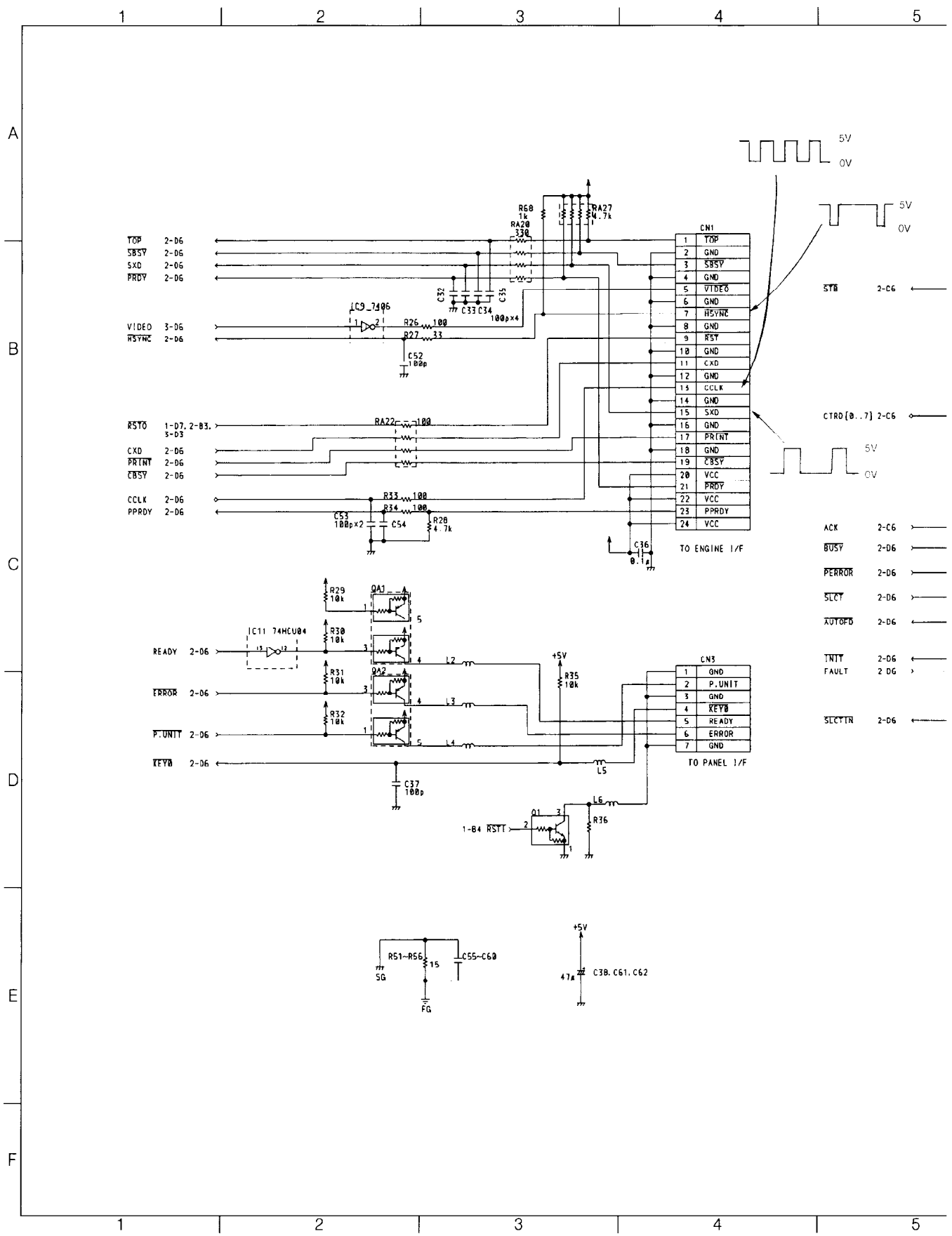

A[1..15] 2-A6
A[16..23] 1-B7, 2-A3
[C3 (ROM)
ROM0 2-B6
ROM1 2-B6
R66 33
R67 33
D[0..15] 2-A6
+5V
0.1μ
C26
AD [0..5] 1-B7, 2-A3
VDO 2-D6
PWL 2-C6
RSTO 1-D7, 2-B3, 5-B1
LSEST 2-C6
ESTCS1 2-C6
ESTCS2 2-C6
C21
[C11 HCU04
R18 1M
R19 470
X2
C19 18p
C20 18p
13.309MHz
R20 4.7k
R21 22
R23 22
R22 22
C22 10p
[C11
C23 0.1μ

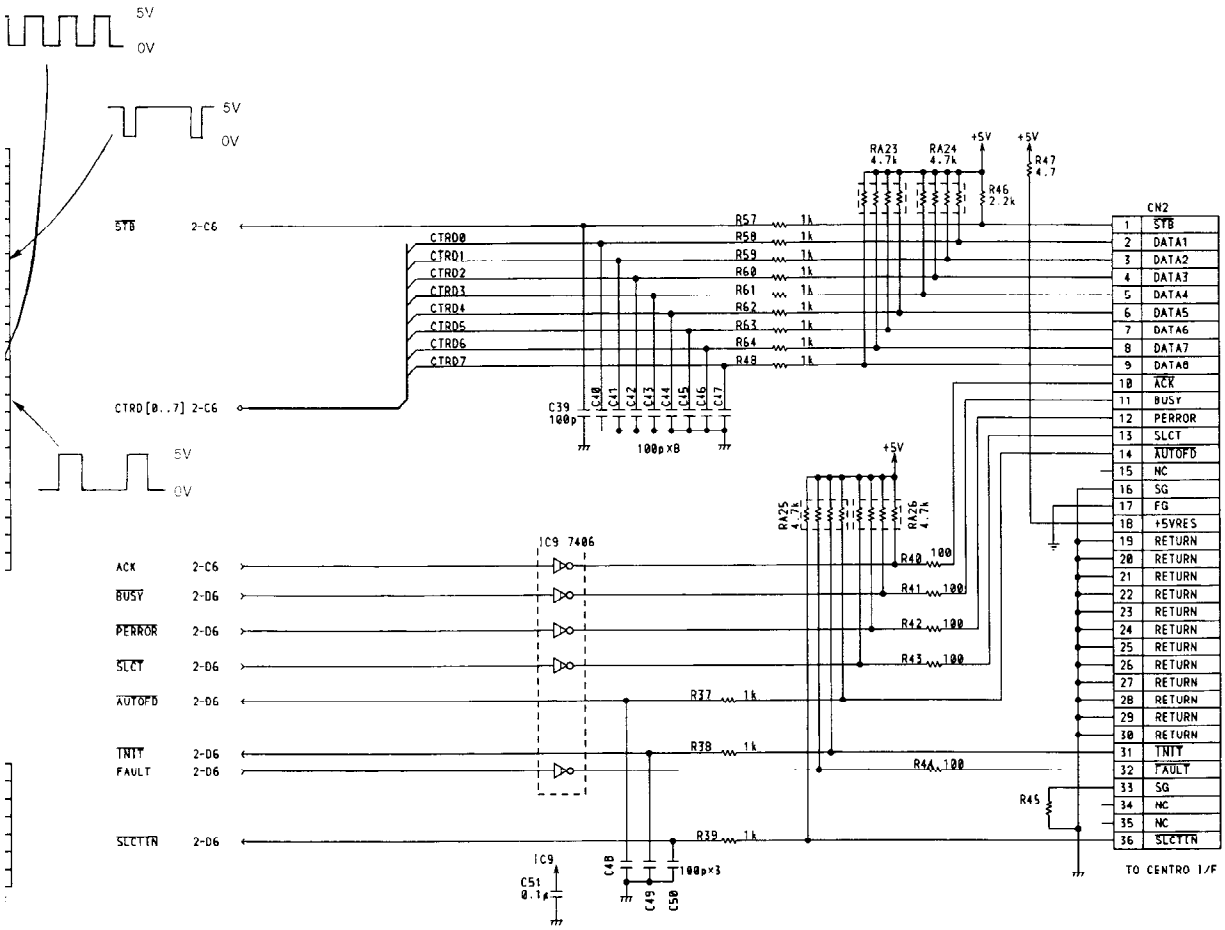

IC3 (ROM)
IC4 (ROM)
D15/A-1
BYTE/Vpp
GND
C26
C27
0.1µ
+5V


IC12
CF45529N (ORT OPTION)
VDD
VCLK
VSS
CKIN
ESTVDO
ON/OFF
R24
10
C24
0.1µ
C25
10p
R25
10k
2-C6 VCLK
2-D6 ORTDET
5-B1 VIDEO
2-C3 VBCLK
JP1
HCU04
R20
4.7k
R21
22
R22
22
R23
22
C22
10p
C21
C23
0.1µ


DA[0..9] 2-C3
DD [0..15] 2-C2
IC7
KM416C256
(DON'T USE)
C28
0.1µ
IC5
HM514800
C29
0.1µ
IC6
HM514800
C30
0.1µ
5V
0V
OE 2-D3
RAS0 2-D3
RAS2 2-D3
CASH 2-D3
CASL 2-D3
WE 2-D3
RAST 2-D3


IC5
IC6
HM514800
HM514800
C29
0.1μ
C30
0.1μ
C31
C67
0.1μ
+5V
+5V
CN4
OPTION DRAM I/F
1A DA9
2A DA7
3A DA5
4A DA3
5A DA1
6A VCC
7A VCC
8A VCC
9A VCC
10A RAS2
11A CASH
12A CASL
13A GND
14A GND
15A DD15
16A DD13
17A DD11
18A DD9
19A DD7
20A DD5
21A DD3
22A DD1
23A GND
24A GND
25A GND
1B DA8
2B DA6
3B DA4
4B DA2
5B DA0
6B VCC
7B VCC
8B VCC
9B NC
10B WE
11B RAS1
12B NC
13B GND
14B GND
15B DD14
16B DD12
17B DD10
18B DD8
19B DD6
20B DD4
21B DD2
22B DD0
23B OE
24B GND
25B GND


TOP 2-D6
SBSY 2-D6
SXD 2-D6
PRDY 2-D6
VIDEO 3-D6
HSYNC 2-D6
RSTO 1-D7, 2-B3, 3-D3
CXD 2-D6
PRINT 2-D6
CBSY 2-D6
CCLK 2-D6
PPRDY 2-D6
READY 2-D6
ERROR 2-D6
P.UNIT 2-D6
KEY0 2-D6
1-B4 RSTT
R68 1k
RA27 4.7k
RA28 330
C32
C33 C34
100p×4
C9_7406
R26 100
R27 33
C52 100p
RA22 100
R33 100
R34 100
C53 100p×2
C54
R28 4.7k
C36 0.1μ
CN1
1 TOP
2 GND
3 SBSY
4 GND
5 VIDEO
6 GND
7 HSYNC
8 GND
9 RST
10 GND
11 CXD
12 GND
13 CCLK
14 GND
15 SXD
16 GND
17 PRINT
18 GND
19 CBSY
20 VCC
21 PRDY
22 VCC
23 PPRDY
24 VCC
TO ENGINE I/F
5V
0V
STB 2-C6
CTRD[0..7] 2-C6
ACK 2-C6
BUSY 2-D6
PERROR 2-D6
SLCT 2-D6
AUTOFD 2-D6
INIT 2-D6
FAULT 2-D6
SLCTIN 2-D6
R29 10k
R30 10k
R31 10k
R32 10k
QA1
QA2
IC11 74HCU04
L2
L3
L4
L5
L6
+5V
R35 10k
Q1
R36
C37 100p
CN3
1 GND
2 P.UNIT
3 GND
4 KEY0
5 READY
6 ERROR
7 GND
TO PANEL I/F
R51~R56 15
C55~C60
SG
FG
47μ
C38, C61, C62

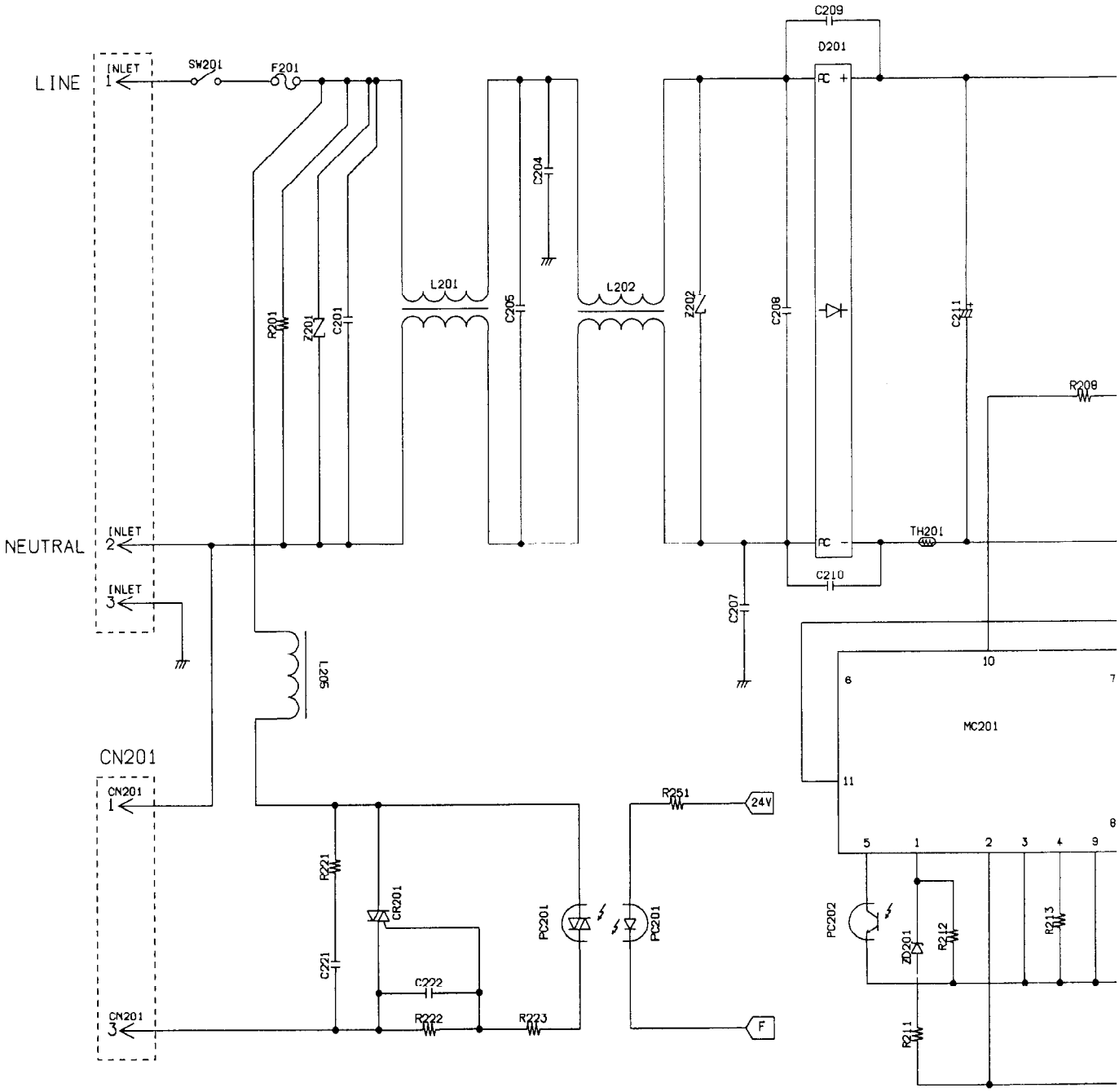

5V
0V
STB 2-C6
CTRD[0..7] 2-C6
ACK 2-C6
BUSY 2-D6
PERROR 2-D6
SLCT 2-D6
AUTOFD 2-D6
INIT 2-D6
FAULT 2-D6
SLCTIN 2-D6
CTRD0
CTRD1
CTRD2
CTRD3
CTRD4
CTRD5
CTRD6
CTRD7
R57 1k
R58 1k
R59 1k
R60 1k
R61 1k
R62 1k
R63 1k
R64 1k
R48 1k
RA23 4.7k
RA24 4.7k
R46 2.2k
R47 4.7
+5V
C39 100p
C40 C41 C42 C43 C44 C45 C46 C47
100p×8
IC9 7406
RA25 4.7k
RA26 4.7k
R40 100
R41 100
R42 100
R43 100
R44 100
R37 1k
R38 1k
R39 1k
R45
IC9
C51 0.1μ
C48 C49 C50
100p×3
CN2
1 STB
2 DATA1
3 DATA2
4 DATA3
5 DATA4
6 DATA5
7 DATA6
8 DATA7
9 DATA8
10 ACK
11 BUSY
12 PERROR
13 SLCT
14 AUTOFD
15 NC
16 SG
17 FG
18 +5VRES
19 RETURN
20 RETURN
21 RETURN
22 RETURN
23 RETURN
24 RETURN
25 RETURN
26 RETURN
27 RETURN
28 RETURN
29 RETURN
30 RETURN
31 INIT
32 FAULT
33 SG
34 NC
35 NC
36 SLCTIN
TO CENTRO I/F

5.8.3 High/Low Voltage Supply Board

5.8.3.1 Low Voltage Power Supply Circuit

Important

1. Do not attempt to repair this power supply uni component replacement. Failure to do so may hazard.
2. High voltage is present on the power supply b
3. Do not power on the power supply without the r output side of the supply. Component damage c

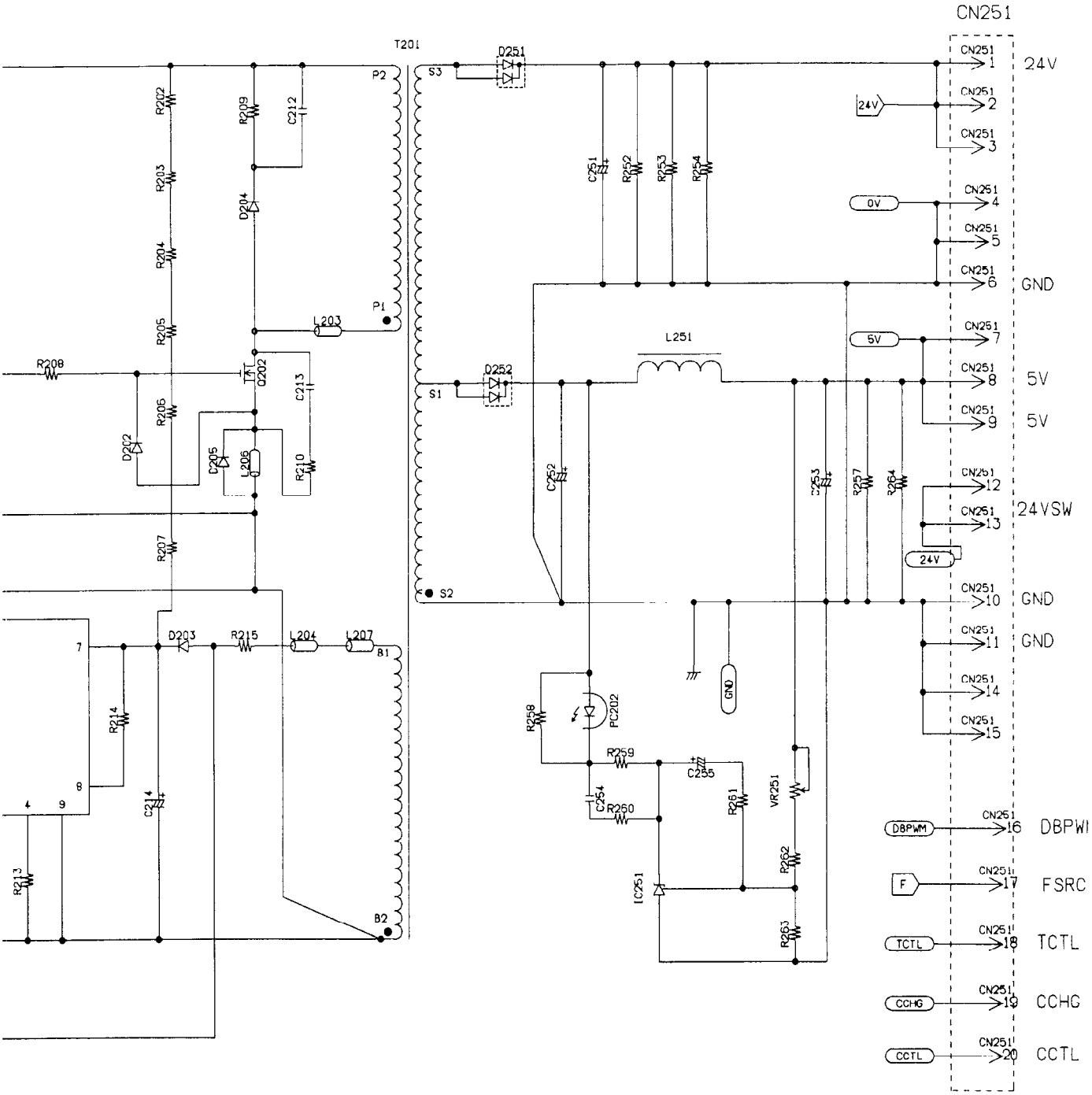


Important Satety Notice

supply unit. This supply requires proper calibration after any
do so may result in component damage, shock fire or other

r supply board. Use caution when measuring voltage levels.

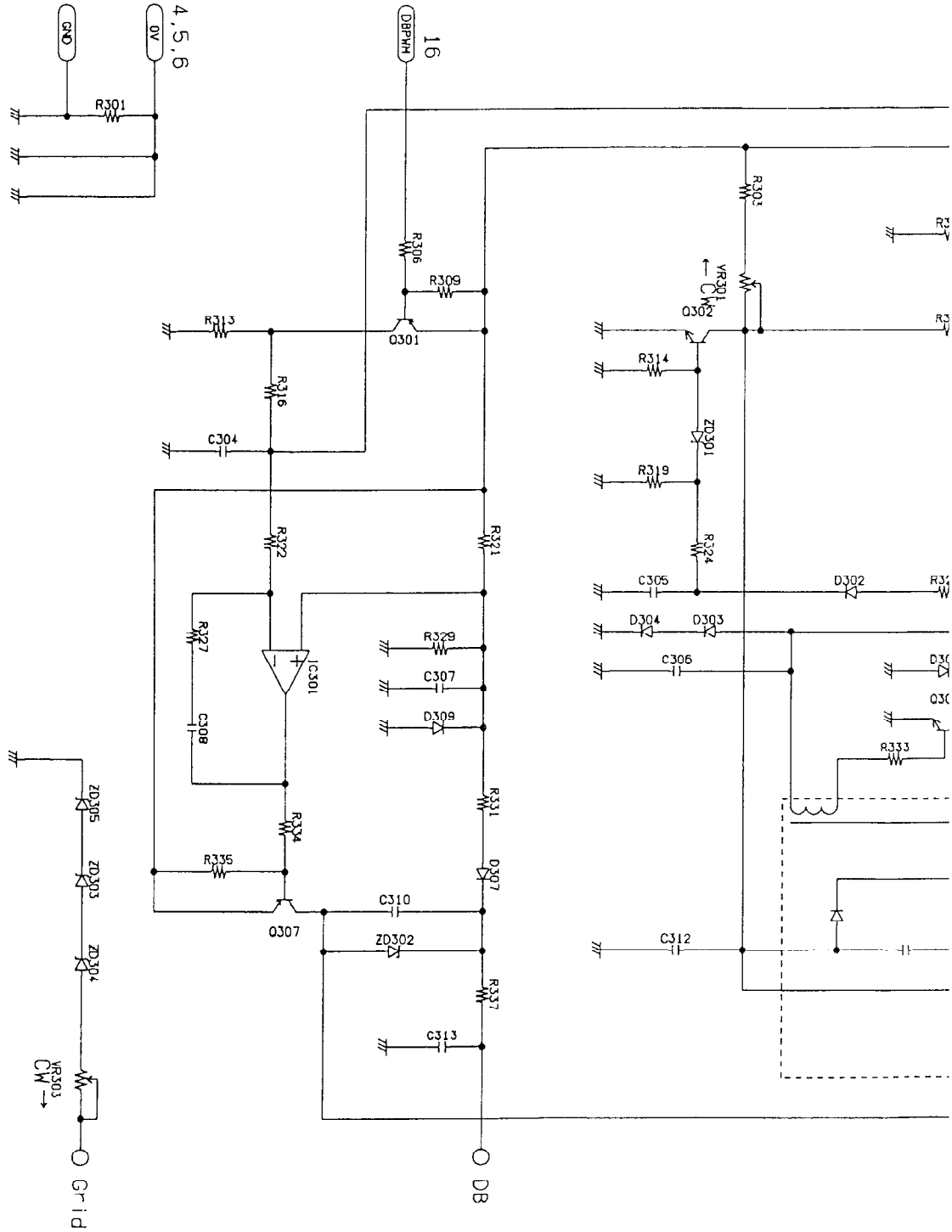
hout the main logic board and engine board connected to the
damage could if a load is not connected to the supply.



5.8.3.2 High Voltage Power Supply Circuit

Important Safety Noti

1. Do not attempt to repair this power supply unit. This supp component replacement. Failure to do so may result in c hazard.
2. High voltage is present on the power supply board. Use c
3. Do not power on the power supply without the main logic bc output side of the supply. Component damage could if a loa

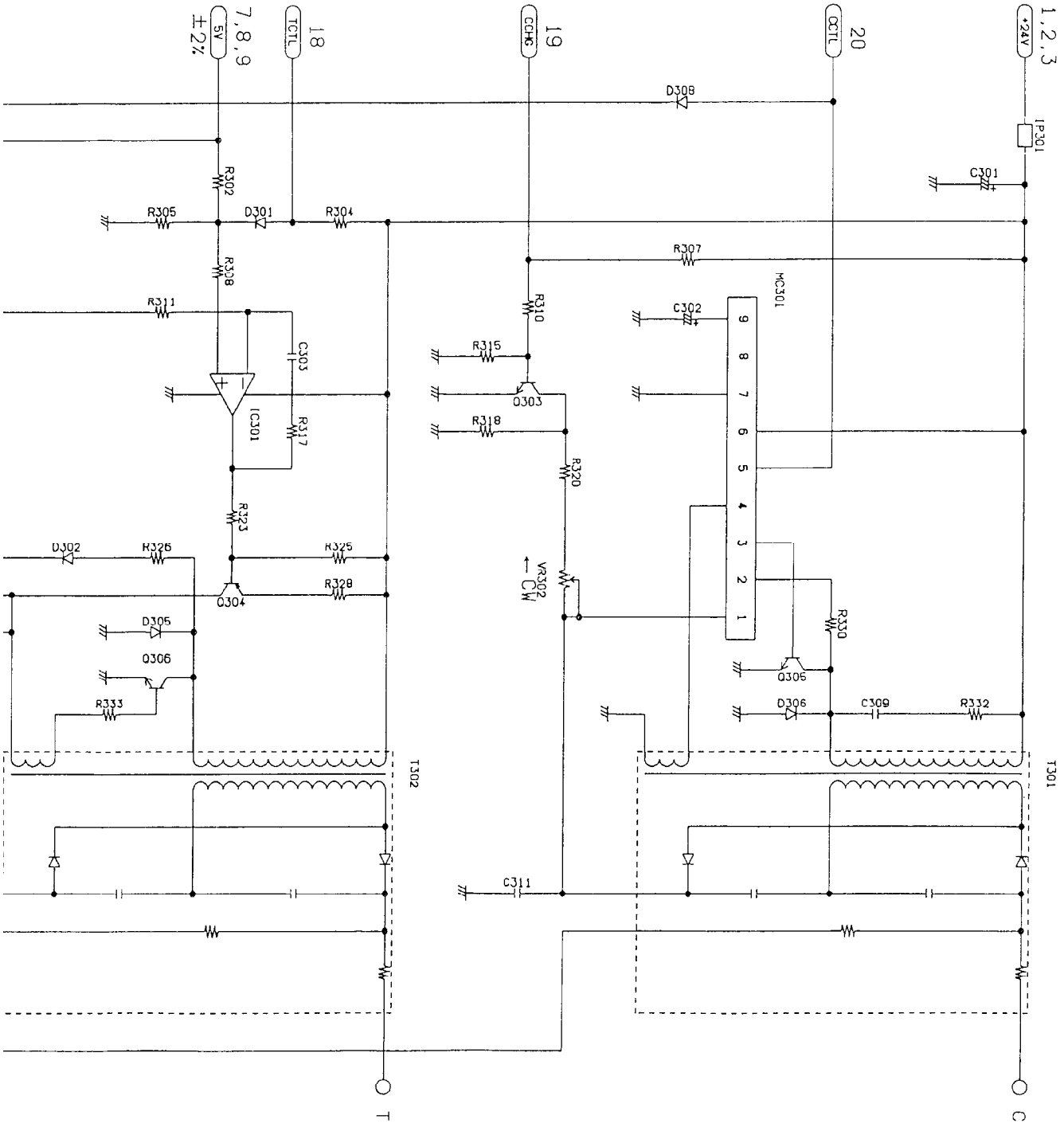


nportant Safety Notice

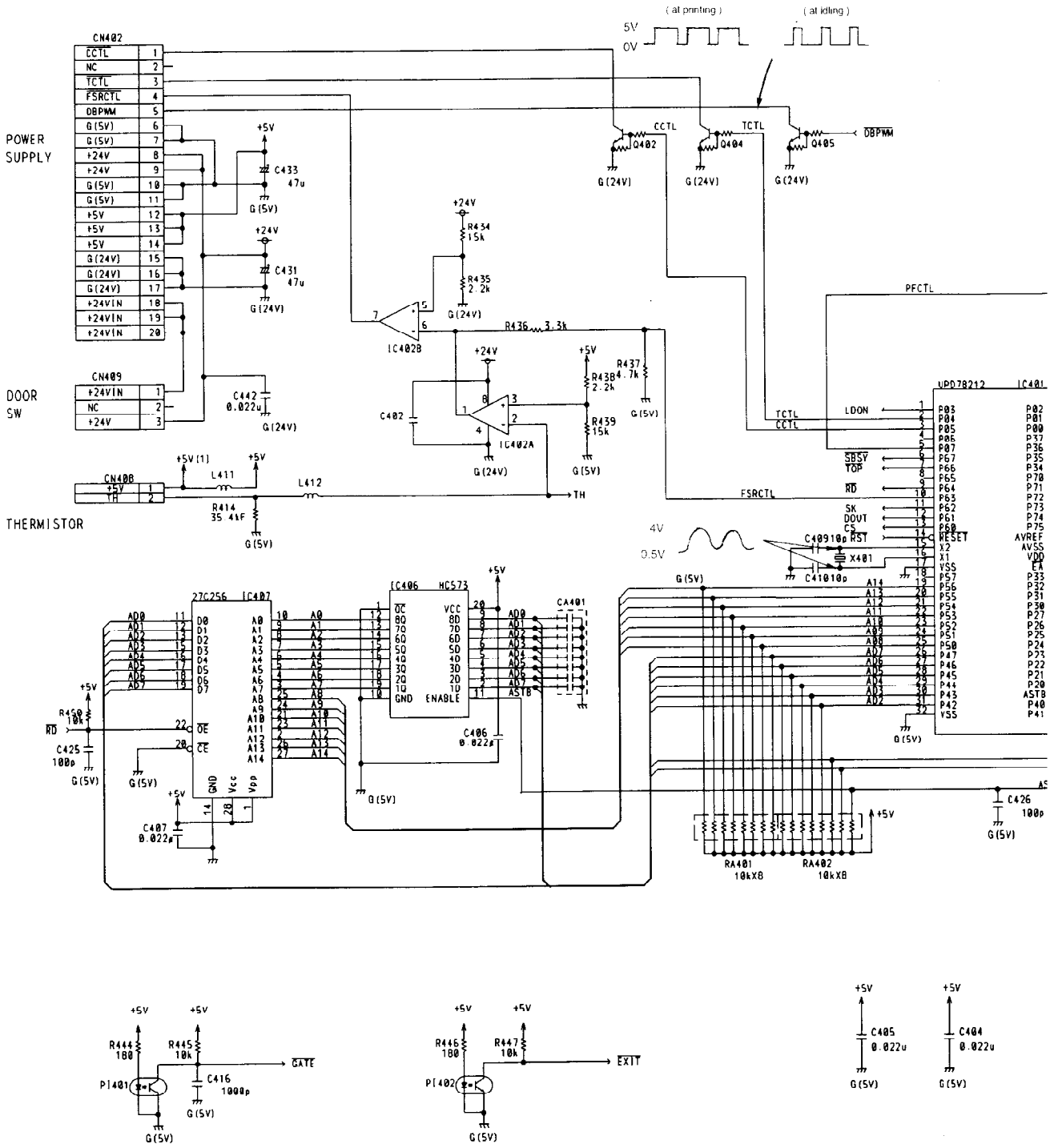
ıpply unit. This supply requires proper calibration after any
ɔ so may result in component damage, shock fire or other

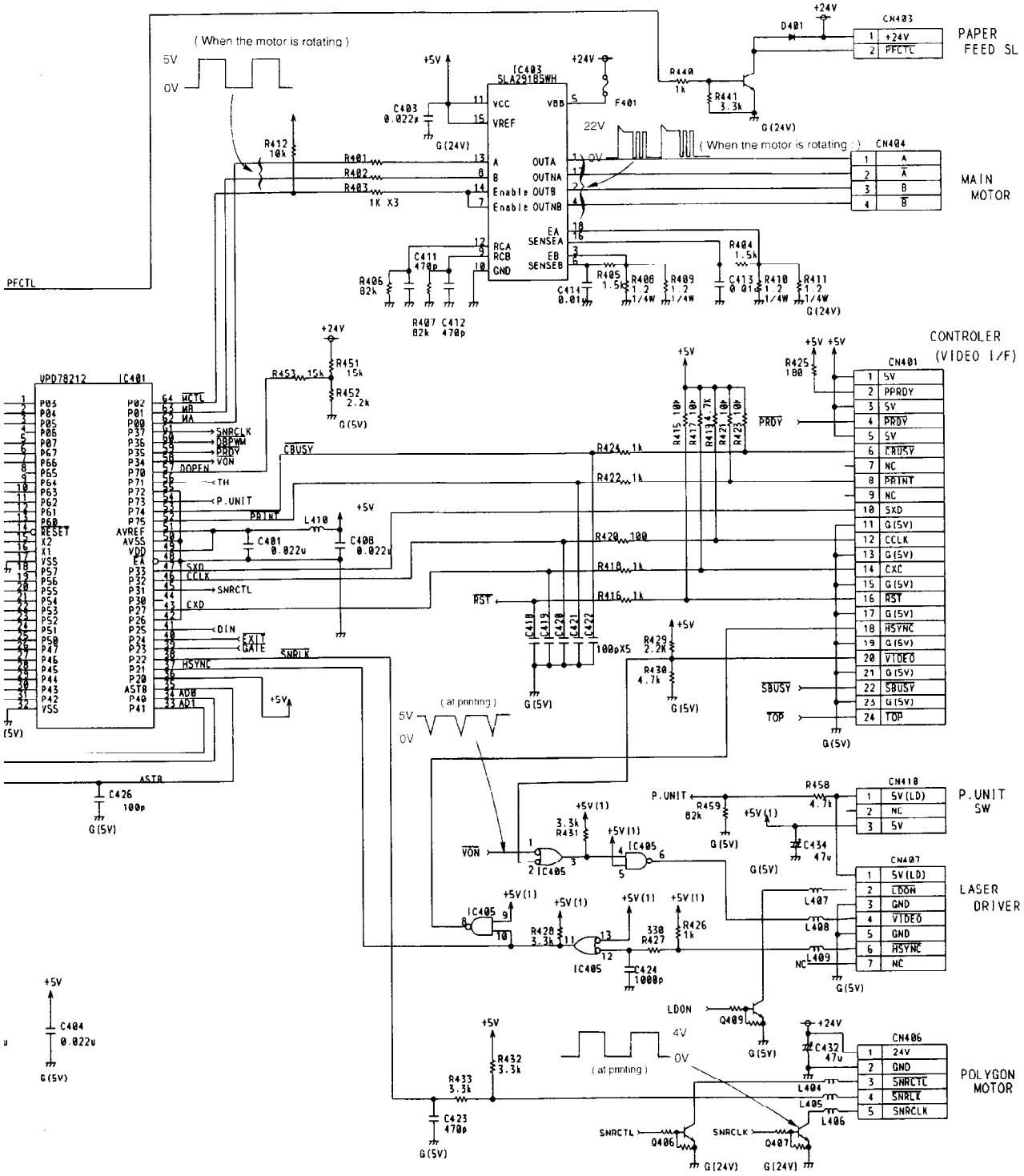
supply board. Use caution when measuring voltage levels.

ɔut the main logic board and engine board connected to the
amage could if a load is not connected to the supply.



5.8.4 Engine Board Circuit




(When the motor is rotating)
5V
0V
IC403
SLA2918SWH
VCC
VREF
VBB
F401
+24V
+5V
G(24V)
C403
0.022μ
R440
1k
R441
3.3k
D401
CN403
1 +24V
2 PFCTL
PAPER FEED SL
22V
(When the motor is rotating :)
CN404
1 A
2 Ā
3 B
4 B̄
MAIN MOTOR
R412
10k
R401
R402
R403
1K X3
A
B
Enable OUTB
Enable OUTNB
OUTA
OUTNA
EA
SENSEA
EB
SENSEB
RCA
RCB
GND
C411
470p
R406
82k
R407
82k
C412
470p
C414
0.01μ
R405
1.5k
R408
1/2
1/4W
R409
1/2
1/4W
C413
0.01μ
R410
1/2
1/4W
R411
1/2
1/4W
R404
1.5k
PFCTL
CONTROLER
(VIDEO I/F)
CN401
1 5V
2 PPRDY
3 5V
4 PRDY
5 5V
6 CBUSY
7 NC
8 PRINT
9 NC
10 SXD
11 G(5V)
12 CCLK
13 G(5V)
14 CXC
15 G(5V)
16 RST
17 G(5V)
18 HSYNC
19 G(5V)
20 VIDEO
21 G(5V)
22 SBUSY
23 G(5V)
24 TOP
UPD78212
IC401
R451
15k
R452
2.2k
R453
15k
R425
180
R424
1k
R422
1k
R420
100
R418
1k
R416
1k
R415
10p
R417
10p
R413
4.7k
R421
10p
R423
10p
PRDY
CBUSY
PRINT
L410
C401
0.022u
C408
0.022u
C418
C419
C420
C421
C422
100pX5
R429
2.2k
R430
4.7k
SBUSY
TOP
RST
SNRCLK
SXD
CCLK
CXD
DIN
EXIT
GATE
HSYNC
SNRLK
ASTB
C426
100p
(at printing)
5V
0V
P.UNIT
R458
4.7k
R459
82k
C434
47u
CN410
1 5V(LD)
2 NC
3 5V
P.UNIT SW
CN407
1 5V(LD)
2 LDON
3 GND
4 VIDEO
5 GND
6 HSYNC
7 NC
LASER DRIVER
L407
L408
L409
NC
IC405
R428
3.3k
R427
330
R426
1k
C424
1000p
LDON
Q409
C404
0.022u
R432
3.3k
R433
3.3k
C423
470p
4V
0V
(at printing)
C432
47u
L404
L405
L406
CN406
1 24V
2 GND
3 SNRCTL
4 SNRLK
5 SNRCLK
POLYGON MOTOR
SNRCTL
SNRCLK
Q406
Q407
G(24V)
G(5V)

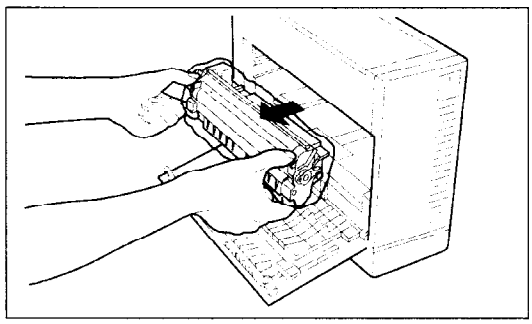
6. Removal and Replacement Procedures

6.1 Process Unit

This is a consumable item, no servicing is required except for the charge corona unit and gears.

1. Open the OPC Drum Side Cover by gently pulling the Cover Release Tab.

2. Remove the process unit by holding both tabs and pulling the process unit toward you.



Caution:

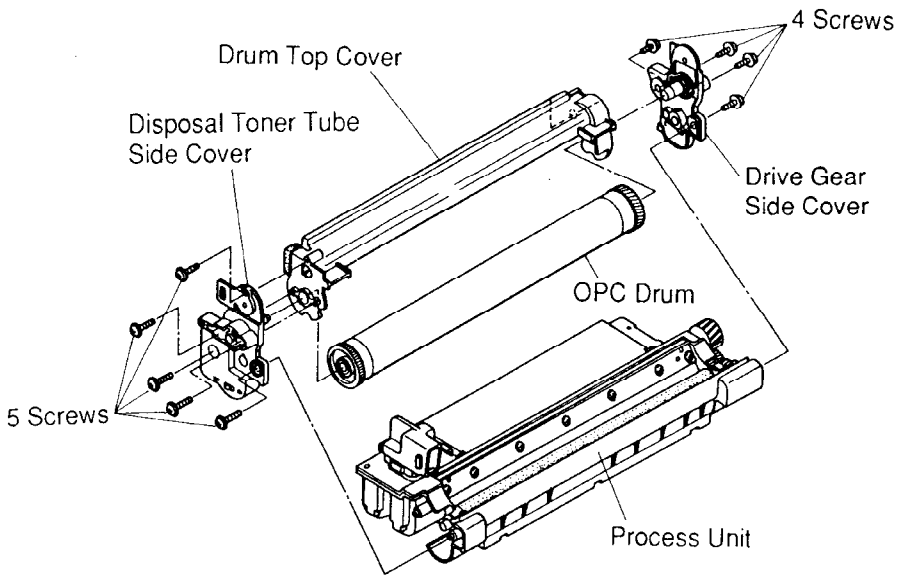
1. Do not expose the OPC Drum to light.
2. Do not touch the surface of the drum.
3. Do not turn the drum unit upside down, or toner may block the waste toner sensor, causing a premature change OPC indication.

6.1.1 OPC Drum

1. Remove the Disposal Toner Tube Side Cover (5 screws).

2. Remove the Drive Gear Side Cover (4 screws).

3. The OPC Drum and Drum Top Cover with the Charge Corona Unit can now be removed from the Drum Unit.

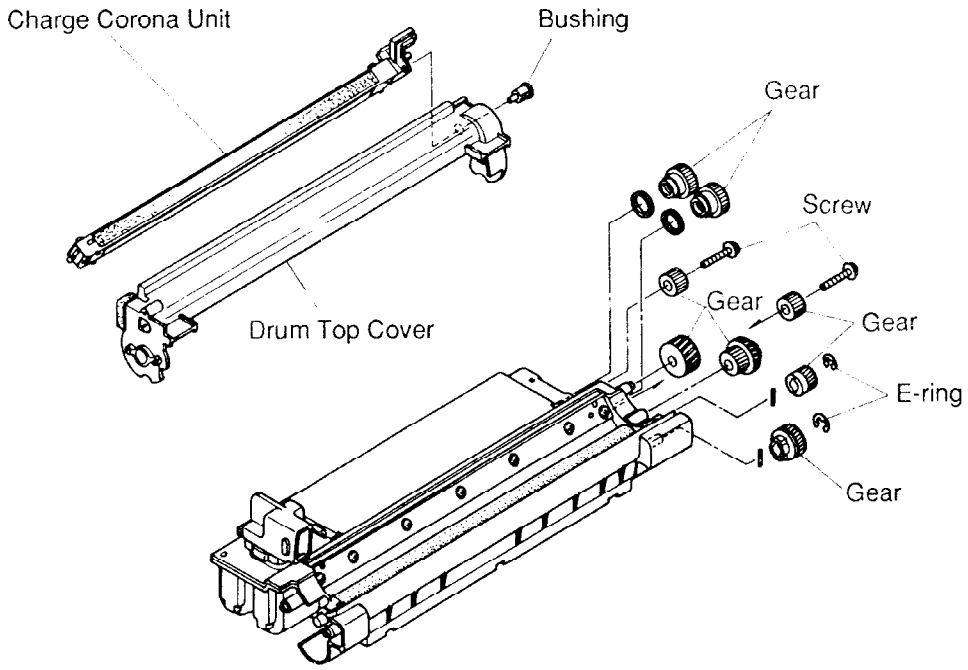


6.1.2 Charge Corona Unit and Gears

1. Remove the bushing from the Drum Top Cover.

2. Slide the Charge Corona Unit to the left, then remove it.

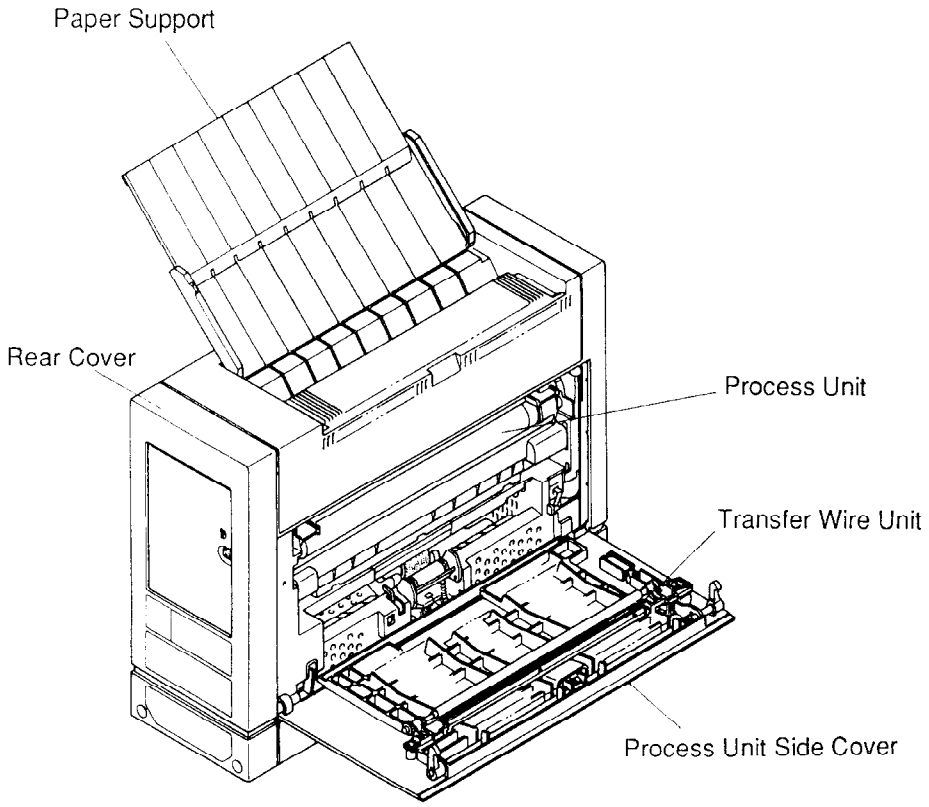
3. Remove the screws, E-rings, and gears shown below.

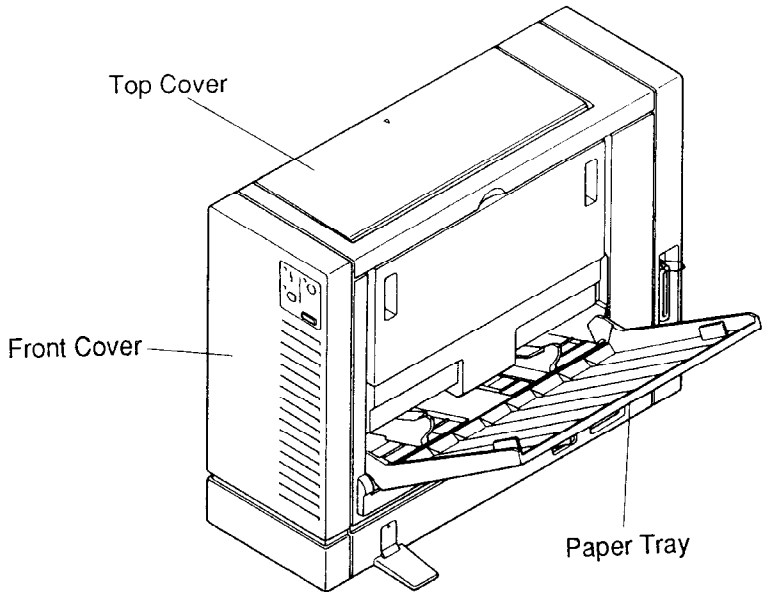


6.2 Exterior

<< Caution >>

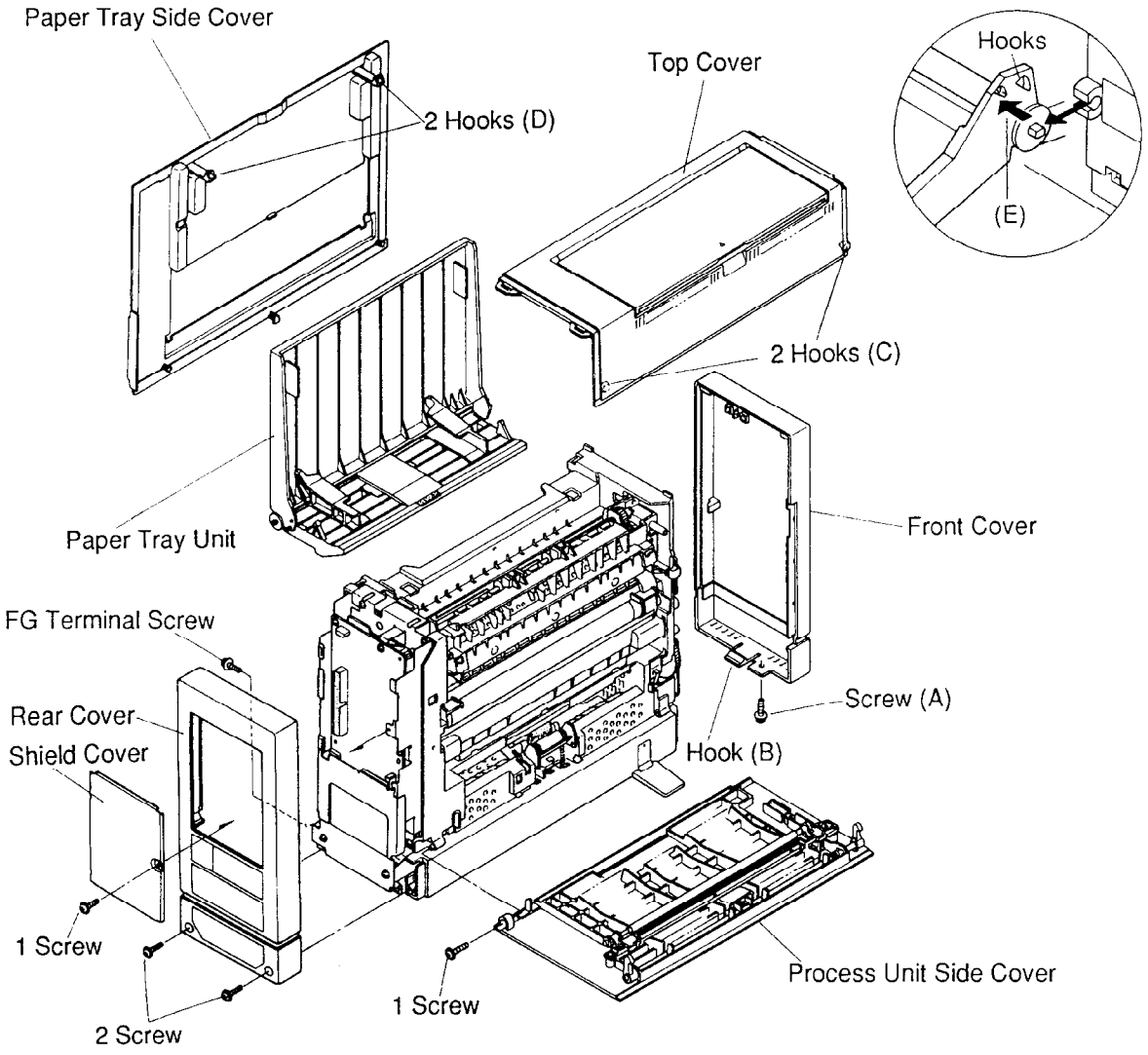
Always unplug the machine before replacing any components.





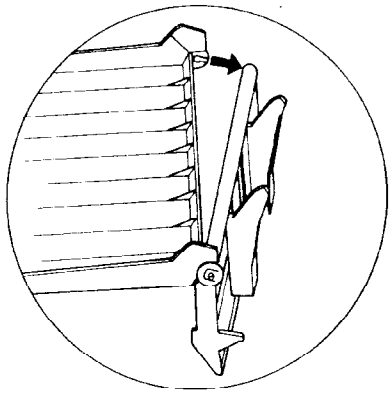
6.2.1 Covers

1. Remove one screw (A), and then remove the Front Cover by releasing the hook (B) from the bottom side of the machine.
2. Remove the Shield Cover (1 screw).
3. Remove the Rear Cover (2 screws and FG terminal screw).
4. Open the Process Unit Side Cover, and remove the Top Cover with the Output Paper Tray by releasing 2 hooks (C).
5. Then remove the Process Unit Side Cover with the Transfer Wire Unit (1 screw).
6. Remove the Paper Tray Side Cover by releasing 2 hooks (D).
7. Release 2 hooks from the Base Frame by pushing part E as shown below (arrow), and then gently remove the Paper Tray Unit after disconnecting 2 hinges from the Base Frame.

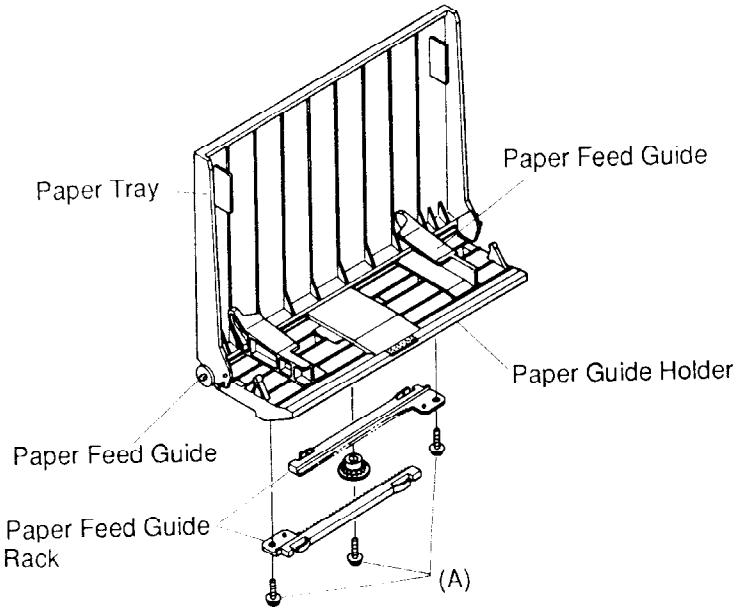


6.2.2 Paper Tray, Paper Feed Guides and Paper Feed Guide Racks

1. Remove 3 screws (A) from the unit. The Paper Feed Guides and Paper Feed Guide Racks can now be separated from the Paper Tray Unit.
2. Pivot the Paper Tray Unit so that the hinges are as shown in Figure - B.
3. Separate the Paper Feed Guide Holder from the Paper Tray by disconnecting the hinges as shown in Figure - B (arrow).

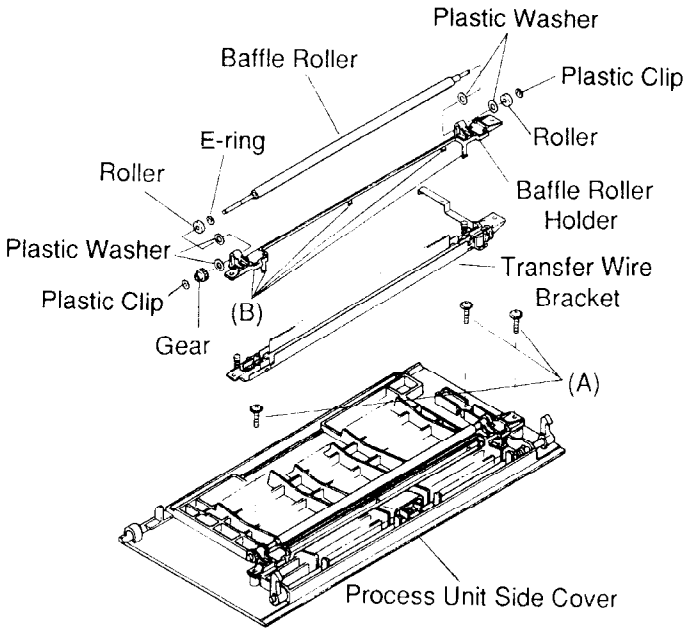


(Figure - B)



6.2.3 Baffle Roller and Transfer Wire

1. Remove 3 screws (A) and the Baffle Roller Unit from the Process Unit Side Cover.
2. Release 5 hooks (B), and then remove the Baffle Roller Assembly from the Transfer Wire Bracket.
3. Remove the Transfer Wire from the bracket.
4. Remove 2 Plastic Rings, E-ring, 4 Plastic Washers, Gear and 2 Rollers from the Baffle Roller.
5. Slide the Baffle Roller out of the Baffle Roller Holder. The Baffle Roller and its holder can now be separated.



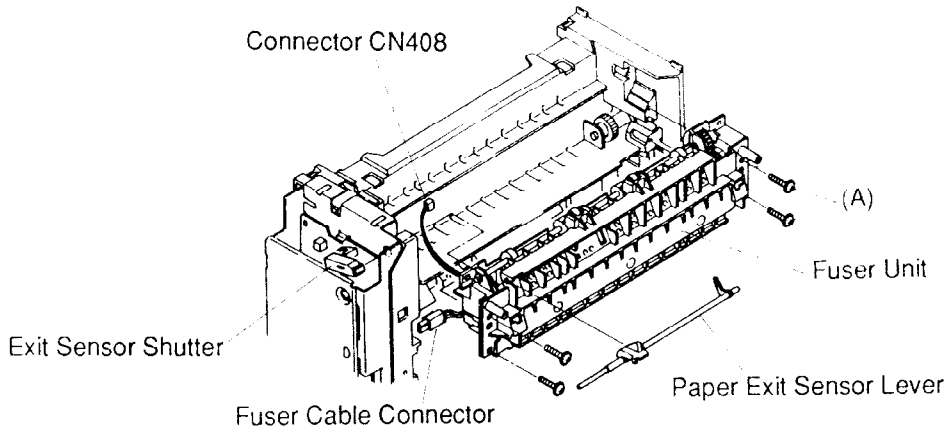
6.3 Fuser Unit

1. Disconnect CN408 on the Engine Board.

2. Separate the Exit Sensor Shutter from the sensor lever, then remove the shutter lever.

3. Remove 4 screws (A) from the machine.

4. Separate the Fuser Unit from the machine. Then disconnect the fuser cable connector. The Fuser Unit can now be separated from the machine.

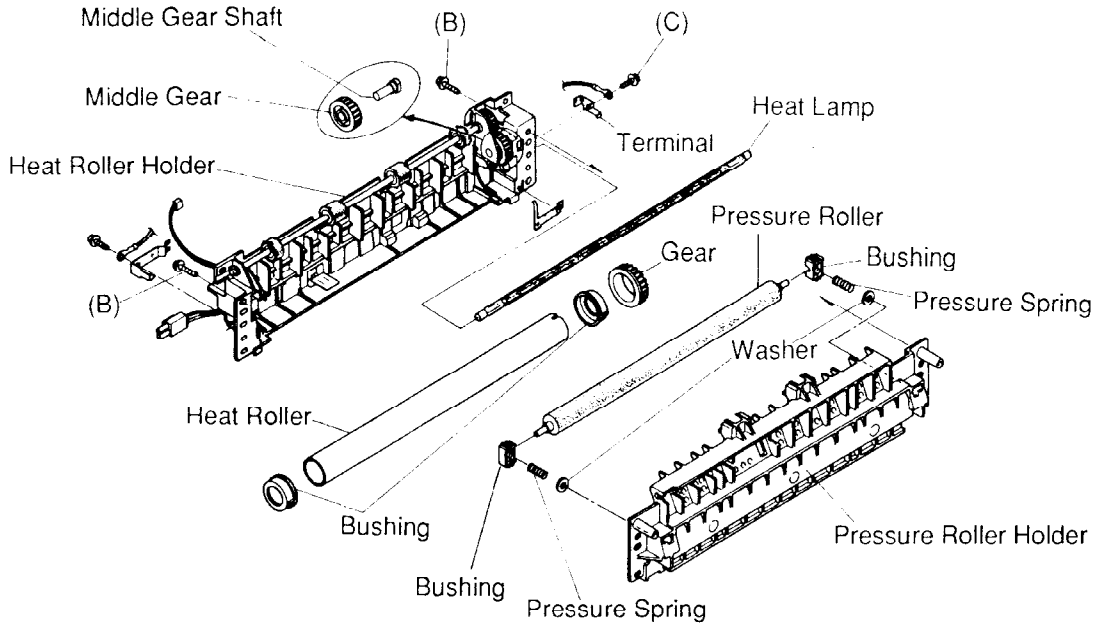


Caution : Be careful not to lose the middle gear or its shaft when separating the Pressure Roller Holder from the Fuser Unit.

5. Remove 2 screws (B), then separate the Pressure Roller from the Pressure Roller Holder.
The Pressure Roller Holder, 2 Bushings, 2 Pressure Springs and 2 Washers can now be separated.

6. Remove one screw (C) and the terminal, then pull the Heat Lamp from the Heat Roller.

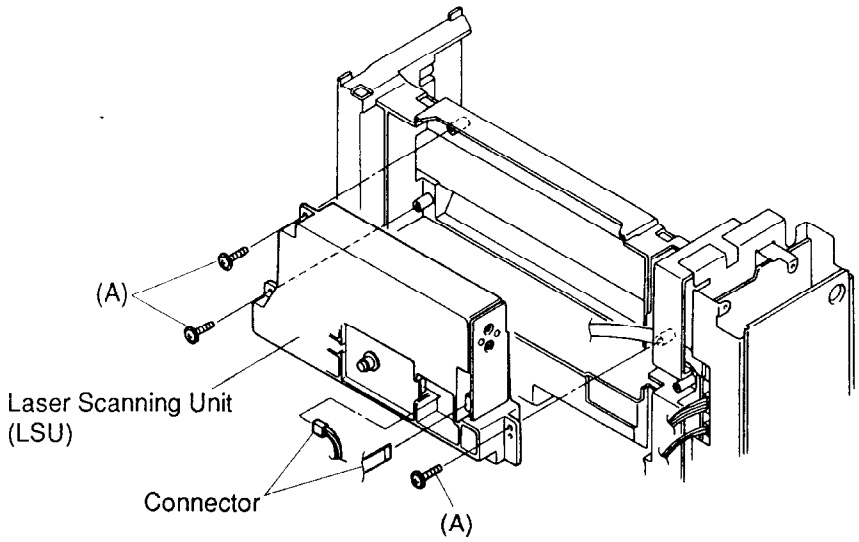
7. Remove the Earth Spring Plate from the Heat Roller Holder. The Heat Roller, 2 bushings and Heat Roller Gear can now be separated from the Heat Roller Holder.



6.4 Laser Scanning Unit (LSU)

1. Disconnect 2 connectors from the LSU.

2. Remove 3 screws (A) and the LSU.

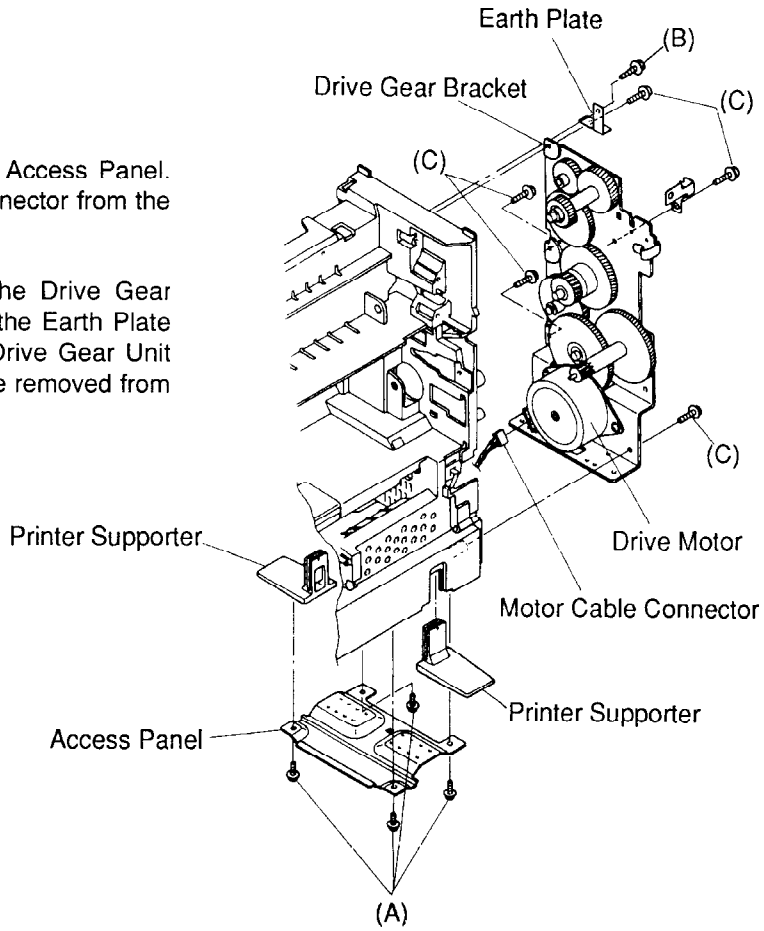


6.5 Drive Gear Unit

1. Remove 2 Printer Supporters.

2. Remove 4 screws (A) and the Access Panel. Disconnect the motor cable connector from the motor.

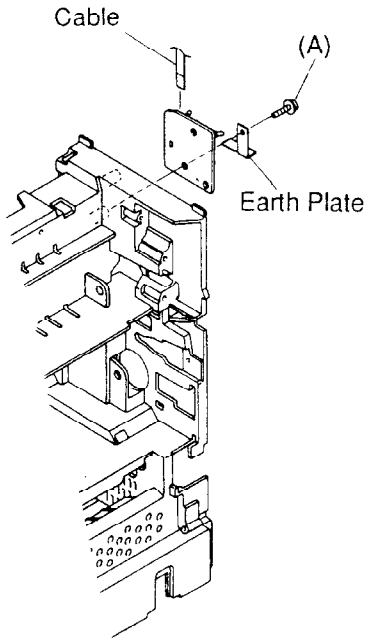
3. Remove 5 screws (C) from the Drive Gear Bracket and 1 screw (B) from the Earth Plate on the Indicator Board. The Drive Gear Unit with the Drive Motor can now be removed from the machine.



6.6 Indicator Board

Remove the cable from CN501.
The Indicator Board can now be removed.

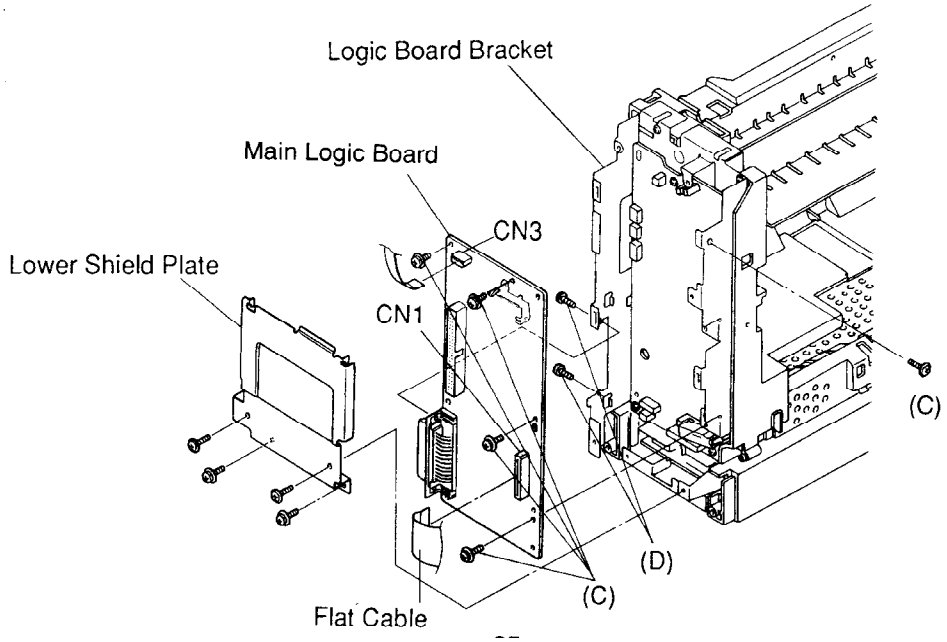
If necessary, remove the earth plate and screw (A).
These parts may be installed on the Indicator Board.



6.7 Main Logic Board

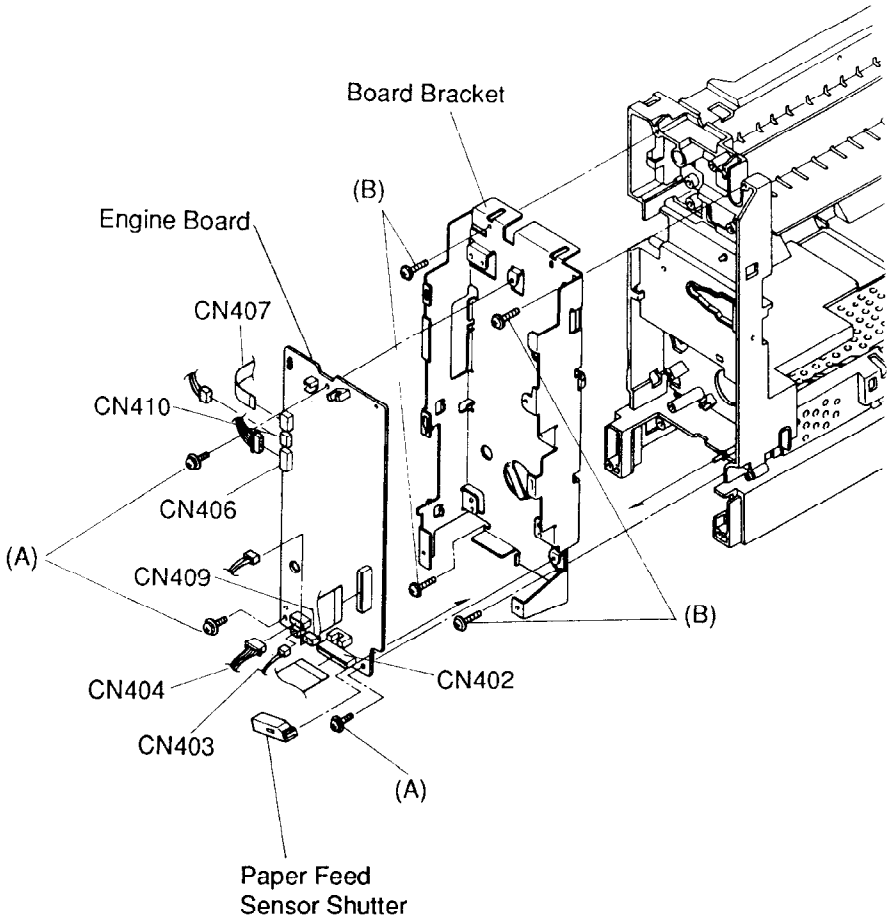
1. Remove 4 screws (B) and the Lower Shield Plate.
2. Disconnect the flat cable from the connector CN1 on the Main Logic Board.
3. If necessary, disconnect the Flat Cable from CN3. This Flat Cable may be connected to CN501 on the Indicator Board.
4. Remove 5 screws (C) on the Main Logic Board.
5. Remove 2 screws (D) on the Logic Board Bracket.

   The Main Logic Board can now be removed from the machine.



6.8 Engine Board and Main Board Bracket

1. Disconnect the cables from CN410, CN409, CN404, CN403 and CN402 on the Engine Board.
   If necessary, disconnect the cables from CN406 and CN407. These cables may be connected to connectors on the LSU.
2. Remove the Paper Feed Sensor Shutter.
3. Remove the 3 screws (A) and the Engine Board.
4. Remove 4 screws (B) and the Board Bracket.

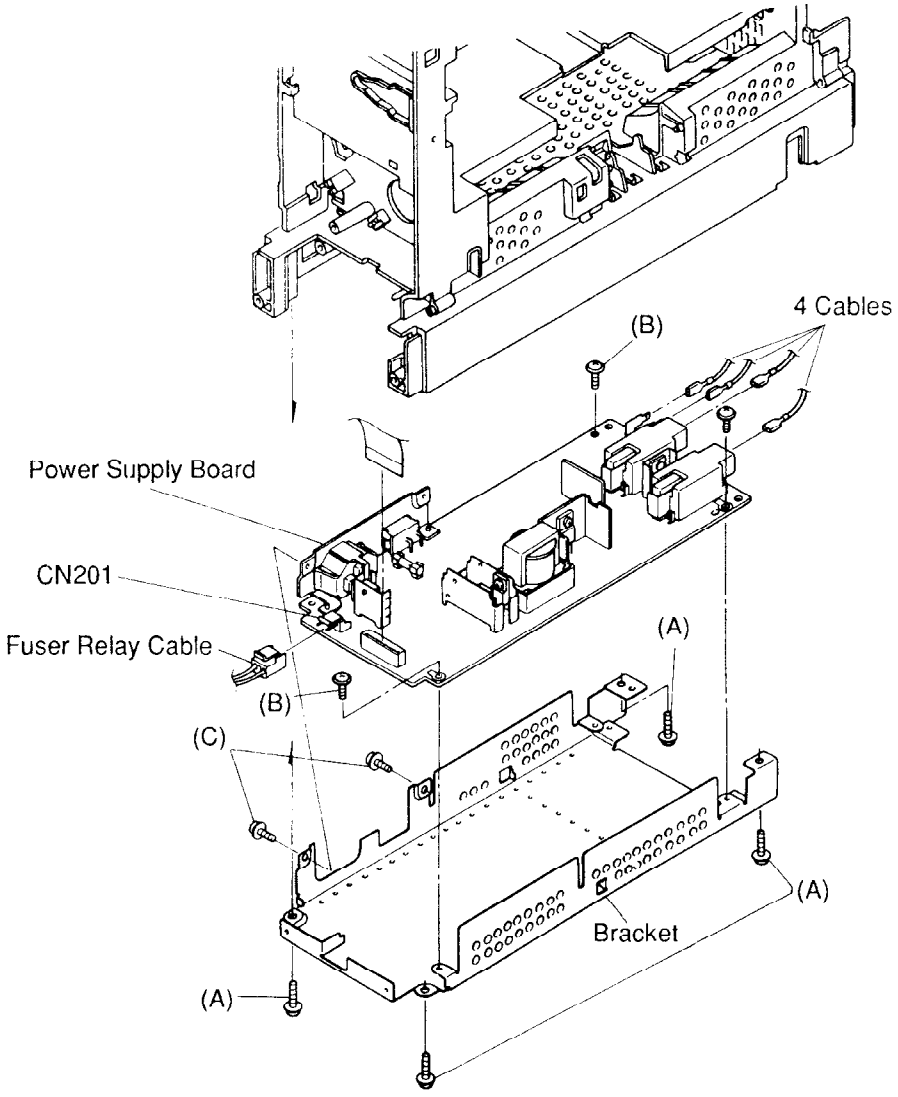


6.9 High/Low Voltage Power Supply Board

1. Disconnect the fuser relay cable from CN201. Disconnect 4 cables from the terminals on the Power Supply Board.

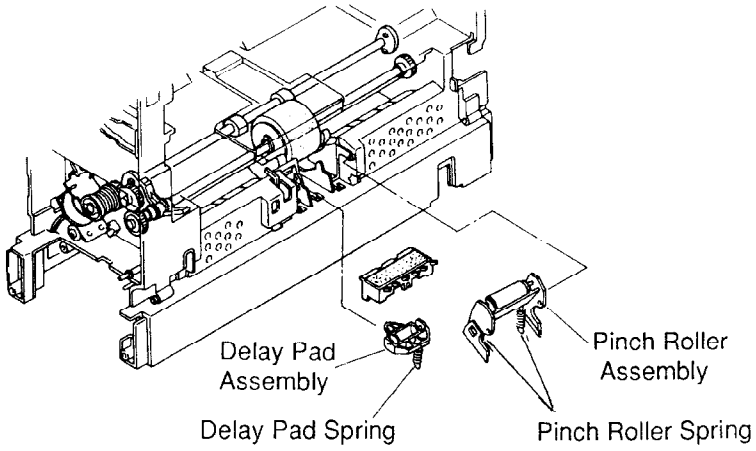
2. Remove 4 screws (A). The Power Supply Board with the bracket can now be removed from the machine.

3. Remove 3 screws (B) from the Power Supply Board and 2 screws (C) from the bracket, then remove the Power Board.



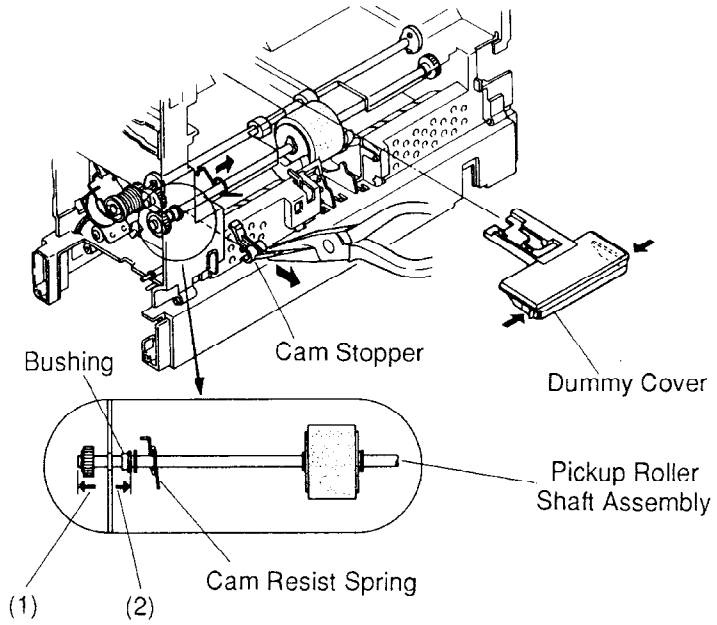
6.10 Pinch Roller and Delay Pad

1. Release 2 Pinch Roller springs from the hooks, and remove the Pinch Roller Assembly.
2. Release the Delay Pad spring from the hook, and remove the Delay Pad Assembly.



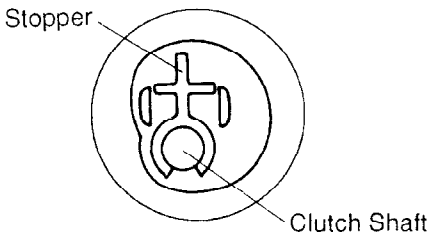
6.11 Pickup Roller, Paper Feed Clutch and Toner Empty Sensor Board

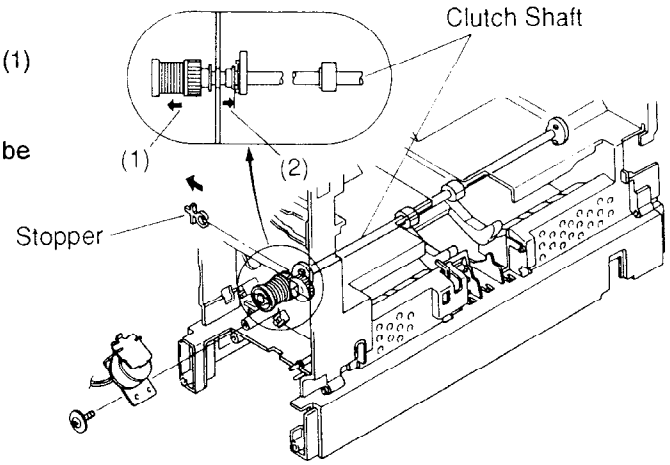
1. Remove the Dummy Cover .
2. Release the Cam Resist Spring from the Cam Stopper.
3. Remove the Cam Stopper.
4. Slide the Pickup Roller Shaft (Arrow [1]), then slide the bushing (Arrow [2]). Remove the Pickup Roller Shaft.



5. Remove the stopper from the Clutch Shaft.
6. Slide the Clutch Shaft in the direction of Arrow (1) then Arrow (2). Remove the Clutch Shaft.

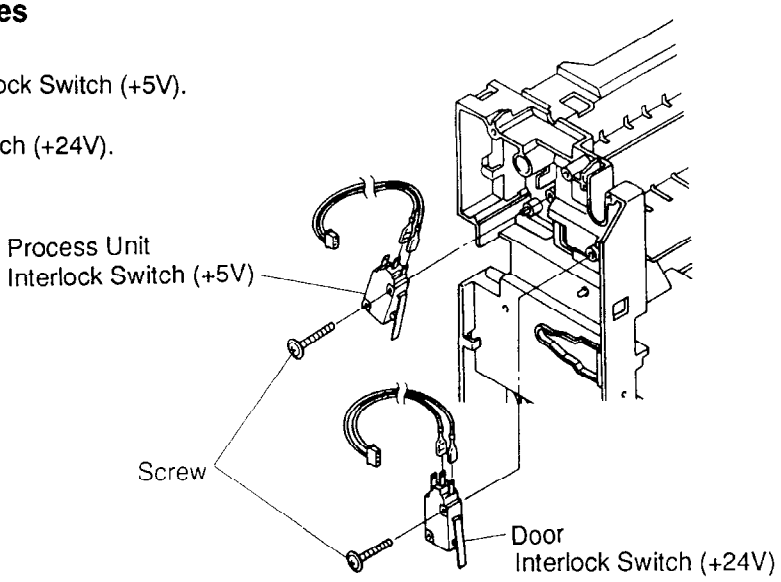
Note: When reinstalling the stopper it must be installed as shown below.





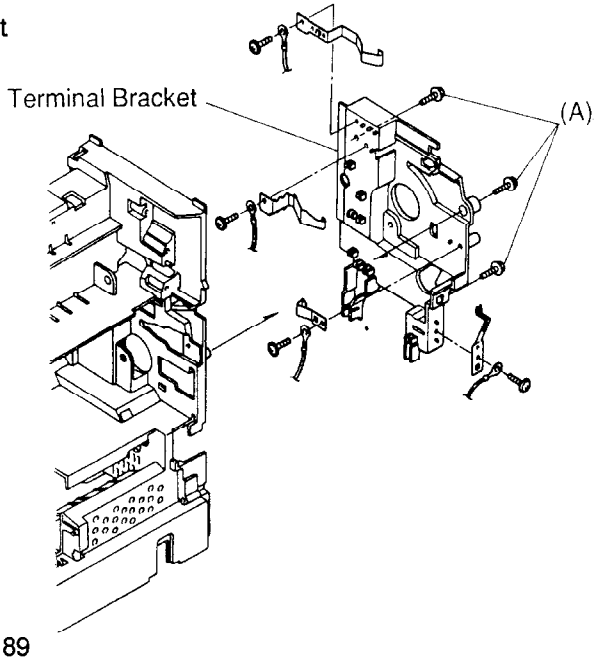
6.12 Safety Interlock Switches

1. Remove the Process Unit Interlock Switch (+5V).
2. Remove the Door Interlock Switch (+24V).



6.13 Terminal Bracket

By removing 3 screws (A), the Terminal Bracket can now be removed from the unit.



7. Preventative Maintenance

7.1 General

The preventative maintenance (PM) schedule is every 2,000 impressions. Adhering to this schedule will result in maximum print quality and reduced machine down time and service calls.

7.2 Recommended Tools

The following tools are recommended.

1. Vacuum cleaner
2. Blower brush
3. Cleaning alcohol
4. Cleaning cotton
5. Cotton swabs

7.3 Recommended Cleaning

1. Remove the process unit.

<< Note >>
When the process unit is removed, keep it covered to prevent light shock.
Do not touch the green OPC drum surface.

2. Vacuum the inside of the machine after removing the process unit. Temporarily store the process unit in the protective bag.

3. Clean the feed rollers with cleaning alcohol.

<< Note >>
Do not use thinner or solvents, as they will damage rubber and plastic components.

4. Clean the corona with the blower brush.

7.4 Maintenance Tables

7.4.1 User Maintenance

Replace these items according to the following schedule :

(x 1000 sheets)

Item \ Service	2	4	6	8	10	12	14	16	18	20	22	24	120
Toner Cartridge (KX-P457)	R	R	R	R	R	R	R	R	R	R	R	R	

Item \ Service	4	8	12	16	20	24	28	32	36	40	44	48	120
Process Unit (KX-PEP3)			R			R			R			R	

R : Replace

The process unit should be replaced when the PC displays " Change Process Unit ".

7.4.2 Service Maintenance

Maintenance Cycle
The following table shows the service cycle of the main parts.

(x 1000 sheets)

Item \ Service	18	36	54	72	90	108
Paper Feed Area						
Paper Feed Roller		C		C		C
Paper Transfer Roller		C		C		C
Transfer Wire		C		C		C
Gear		C		C		C
Delay Pad		C		C		C
Paper Ejection Area						
Paper Ejection Roller		C		C		C
Gear		C		C		C
Process Area						
Gear		C		C		C

C : Clean R : Replace (User replaceable)

Lubrication
Lubricate the following parts when they are replaced or cleaned:

Part	Lubrication Point
Fuser Unit	Drive Gear, Intermediate Gear, Gear Shaft
Main Chassis	Drive Gear, Gear Shafts

Refer to the part list for locations.

Recommended Lubrication
Lubricate the following parts when they are replaced or cleaned:

Part Number	Name	Main Part
PJOL-PG671	Grease	Motor Pinion Gear Plate Shaft
PJOL-948P	Oil	Pinch Roller Shaft
PJOL-K1879	Grease	Paper Feed Clutch

8. Troubleshooting

8.1 Self-Diagnostic Indications

The printer indicates error conditions using the ON, OFF and blinking state of the Ready and Error LED indicators.

8.1.1 Printer Status

Indicators			Printer Status
ERROR	READY	PROCESS UNIT	
◨	◨	◨	Warming up
☐	■	☒	Ready for printing
■	☐	☒	Internal error: Turn the power off, then on again.
☐	▩	☒	Receiving data, printing or data remaining in the printer
▩	☐	☒	Paper jam, paper empty, left cover open, RAM overflow or RAM overrun
▩	☐	■	Process Unit is not installed
☐	☐	▩	Change Process Unit

◨ : The READY indicator, the ERROR indicator and DRUM indicator will light one after another.

■ : on ☐ : off ▩ : blinking

☒ : When the life cycle of the Process Unit has expired, the Process Unit indicator will start blinking.

Button	Indicators			Function
	ERROR	READY	PROCESS UNIT	
PRINT/RESET button	☐	■	☒	Print out a status print by pressing this button for **less than** 5 seconds
				Reset the printer by pressing this button for **more than** 5 seconds
	☐	▩	☒	Print out the remaining data by pressing this button for **less than** 5 seconds
				Reset the printer by pressing this button for **more than** 5 seconds

■ : on ☐ : off ▩ : blinking

☒ : When the life cycle of the Process Unit has expired, the Process Unit indicator will start blinking.

8.1.2 User Error

Indicators			Possible Cause	Recovery
ERROR	READY	PROCESS UNIT		
▩	□	⊠	Output tray (top cover) not open.	Open the output tray (top cover).
			Paper jam has occurred.	Remove the jammed paper.
			Paper tray is empty.	Load paper in the paper tray and press PRINT/ RESET button for **less than** 5 seconds to reset the printer.
			Left cover is open.	Close the left cover.
			Ram overflow or overrun has occurred.	Press PRINT/RESET button for **less than** 5 seconds to reset the printer.
□	□	▩*	The life cycle of the Process Unit has expired.	Install a new Process Unit when the toner supply is depleted.
▩	□	■	Process Unit is not installed.	Install the Process Unit.
■	□	⊠	Internal errors.	If ERROR indicator is lit, turn the power off for a few seconds then on again. If the error continues, service by an Authorized Panasonic Service Centre is required.

■ : on □ : off ▩ : blinking

⊠ : When the life cycle of the Process Unit has expired, the Process Unit indicator will start blinking.

* When the life cycle of the Process Unit has expired, the Process Unit indicator will start blinking. You still can print additional pages until the toner supply is depleted, but it is recommended that you replace the Process Unit as soon as possible with a new one to maintain high print quality.

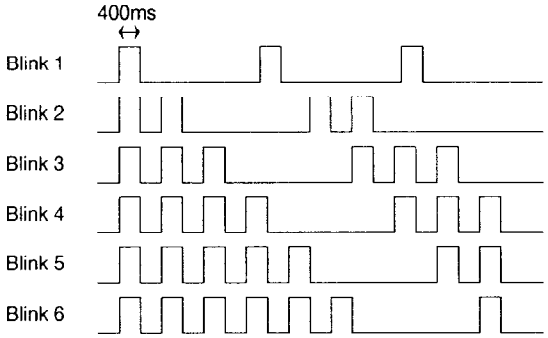
8.1.3 Call for Service

The Error Code is displayed on the host computer screen. Install the "Status Display" to display the Error Code.

Printer Status	LED Indicator Status	Possible Cause	Recovery
Call Service: E20	■ Error ▨ Ready (Blink 5) ⊠ Process Unit	Scanner Motor error	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E30	■ Error ▨ Ready (Blink 3) ⊠ Process Unit	Fuser temperature is above the correct range.	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E31	■ Error ▨ Ready (Blink 3) ⊠ Process Unit	Fuser temperature is below the correct range or the thermistor is open.	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E35	■ Error ▨ Ready (Blink 6) ⊠ Process Unit	Laser malfunction	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E50	■ Error ▨ Ready (Blink 1) ⊠ Process Unit	DRAM read/write error	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E51	■ Error ▨ Ready (Blink 2) ⊠ Process Unit	Read/Write signal cannot access optional DRAM properly.	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E54	■ Error □ Ready ⊠ Process Unit	Main Logic Board ROM error.	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E56	■ Error □ Ready ⊠ Process Unit	Checksum error in internal font Rom.	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E62	■ Error ▨ Ready (Blink 4) ⊠ Process Unit	Engine CPU error	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.
Call Service: E71	■ Error ■ Ready ⊠ Process Unit	EEPROM check error	Turn the power off for a few seconds then on again. If the error continues, call Customer Support.

■ : on □ : off ▨ : blinking

⊠ : When the life cycle of the Process Unit has expired, the Process Unit indicator will start blinking.



9. Special Tool

9.1 Using the Maintenance Tool

The Extention Cable and Insulation Sheet are needed to check the Main Logic, Engine and Indicator Boards.

Tool Number	Tool Name	Per Set	Remarks
PJWXP6100M	Extension Cable	1	This is the special cable for connecting the Main Logic and Engine Boards.
----	Insulation Sheet	1	This testing must be performed on an insulation sheet, which should be obtained locally.

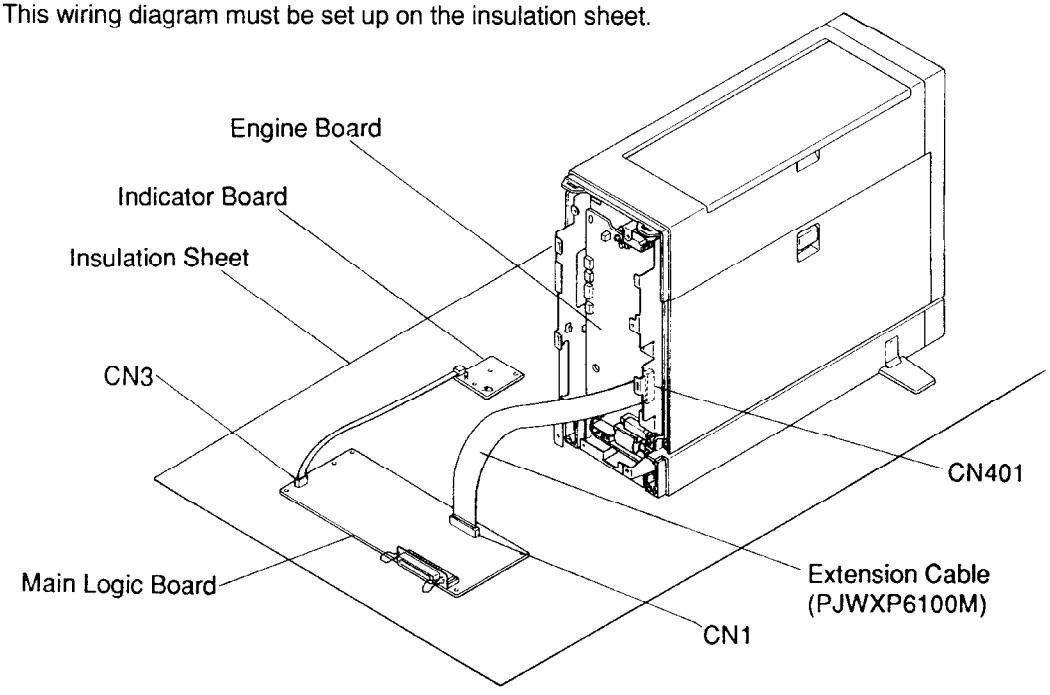
9.1.1 Setup

The following parts must be set up as shown in Section 8.1.2 " Wiring Diagram ".

Parts required to be removed	Reference Section
Rear Cover	Section 5.2.1 " Covers "
Top Cover	Section 5.2.1 " Covers "
Front Cover	Section 5.2.1 " Covers "
Indicator Board	Section 5.6 " Indicator Board "
Upper/Lower Shield Covers for the Main Logic Board	Section 5.7 " Main Logic Board "
Main Logic Board	Section 5.7 " Main Logic Board "

9.1.2 Wiring Diagram

Caution : This wiring diagram must be set up on the insulation sheet.



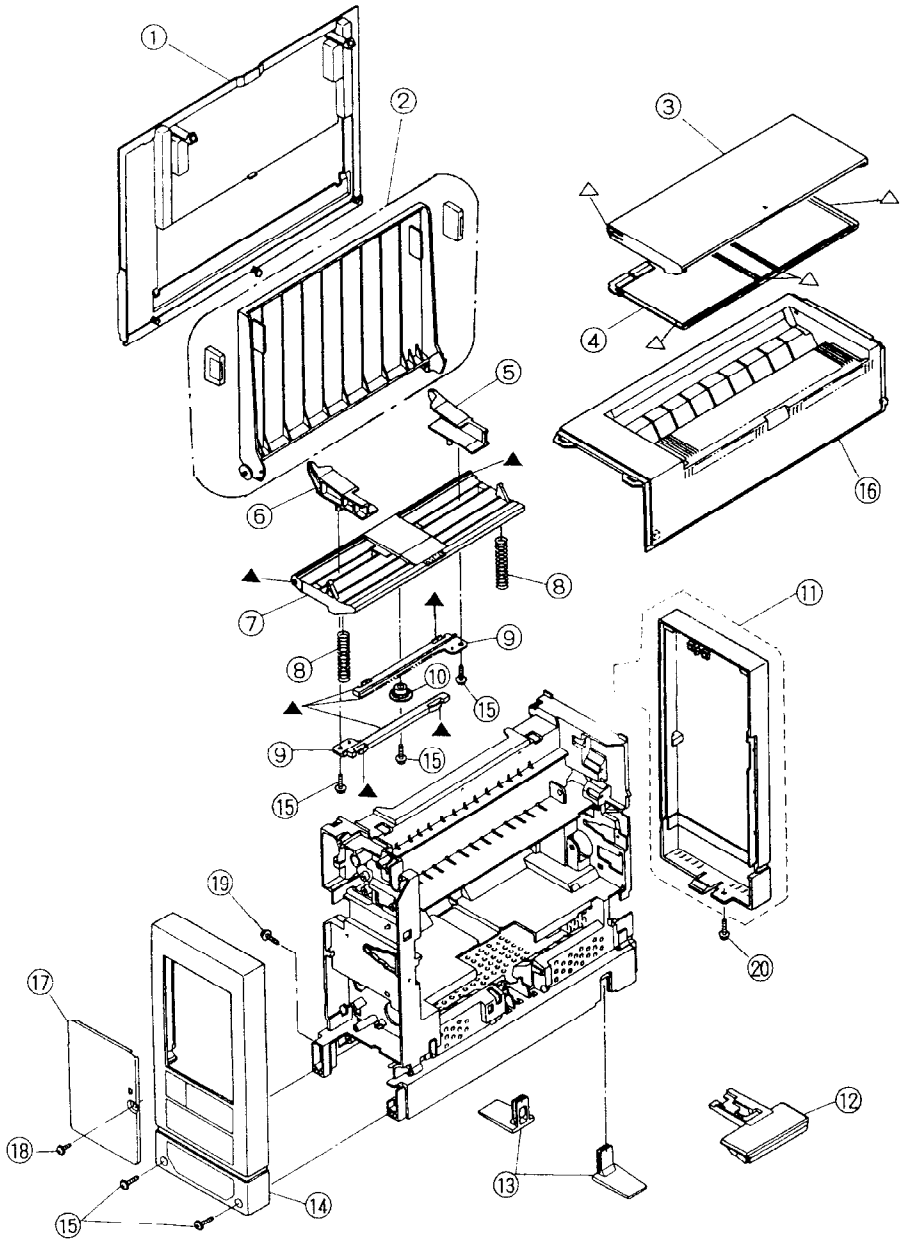
10. Replacement Parts List

Notes:

1. Important safety notice.
   Components identified by ⚠ have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. The S mark is for service standard parts and may differ from production parts.
3. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

10.1 Covers

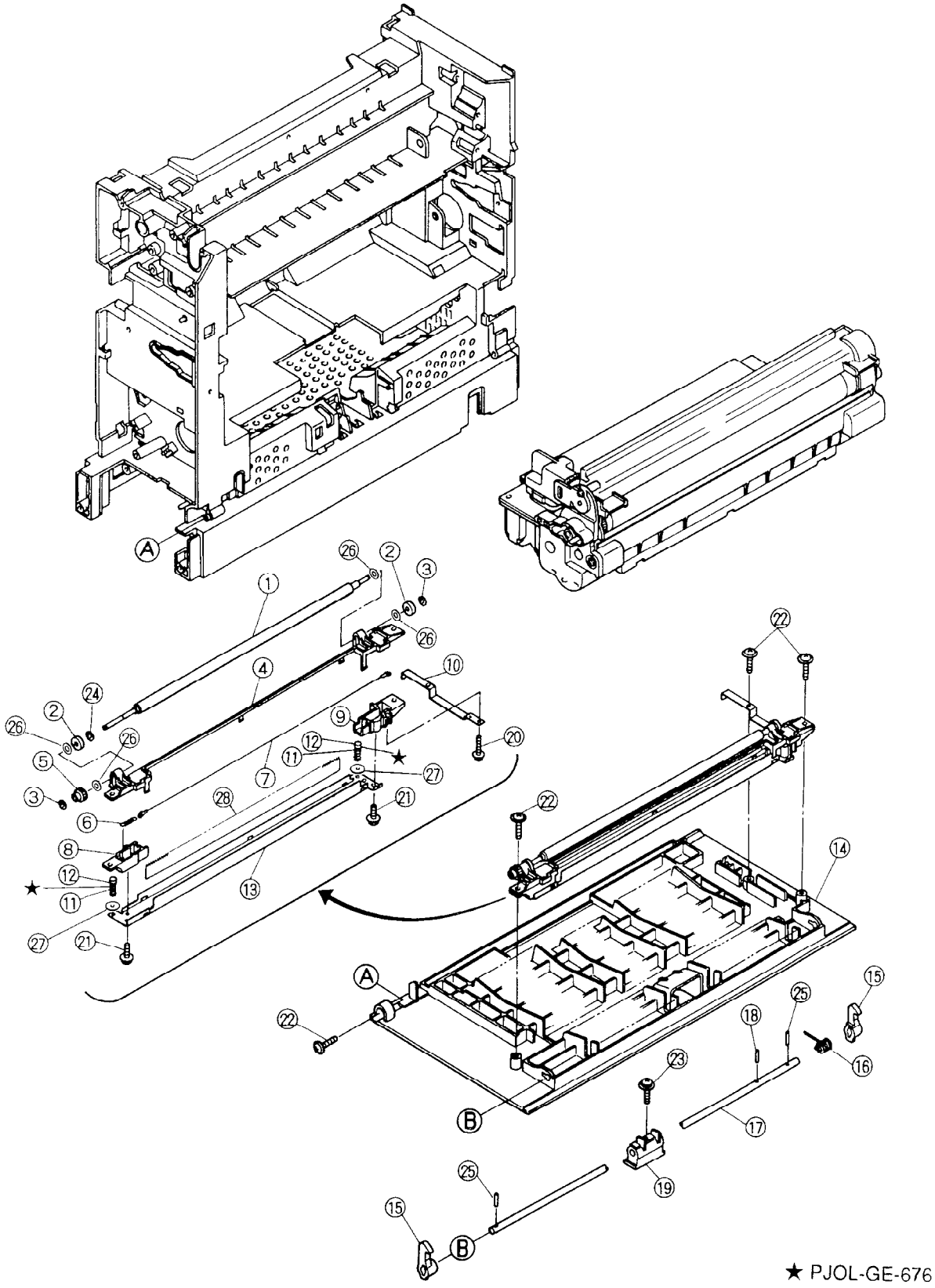
10.1.1 Top, Rear, Front and Paper Tray Side Covers



=Lubrication=
△ PJOL-RX-350
▲ PJOL-SG3451

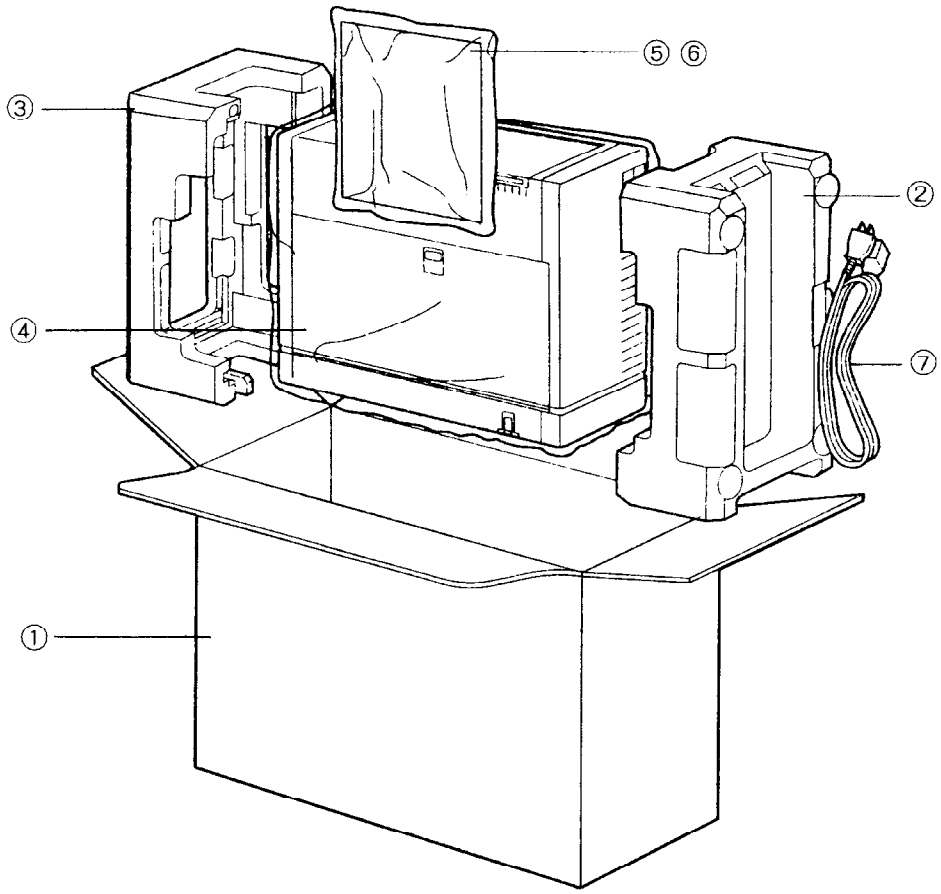
Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJKE235Z	Paper Tray Side Cover	1	
2	PJYP3P6100G	Paper Tray Assembly	1	
3	PJKK167Z	Paper Support	1	
4	PJKK168Z	Output Tray	1	
5	PJHR3117Z	Right Paper Guide	1	
6	PJHR3116Z	Left Paper Guide	1	
7	PJYEP6100M	Paper Guide Holder Assembly	1	
8	PJDS5501Z	Paper Tray Spring	2	
9	PJDG50328Z	Paper Guide Rack	2	
10	PJDG50133Z	Paper Guide Pulley	1	
11	PJYPP6150U	Front Cover Assembly	1	
12	PJHR3137Z	Dummy Cover	1	
13	PJZE4P5400M	Printer Supporter	2	
14	PJYP1P6150U	Rear Cover Assembly	1	
15	XTW3+U10S	Screw 3 x 10	5	
16	PJKF114Z	Top Cover	1	
17	PJUV98Z	Shield Cover	1	
18	XTW3+8L	Screw 3 x 8	1	
19	XTW3D6L	FG Screw	1	
20	XTB3+8F	Screw 3 x 8	1	

10.1.2 Process Unit Side Cover



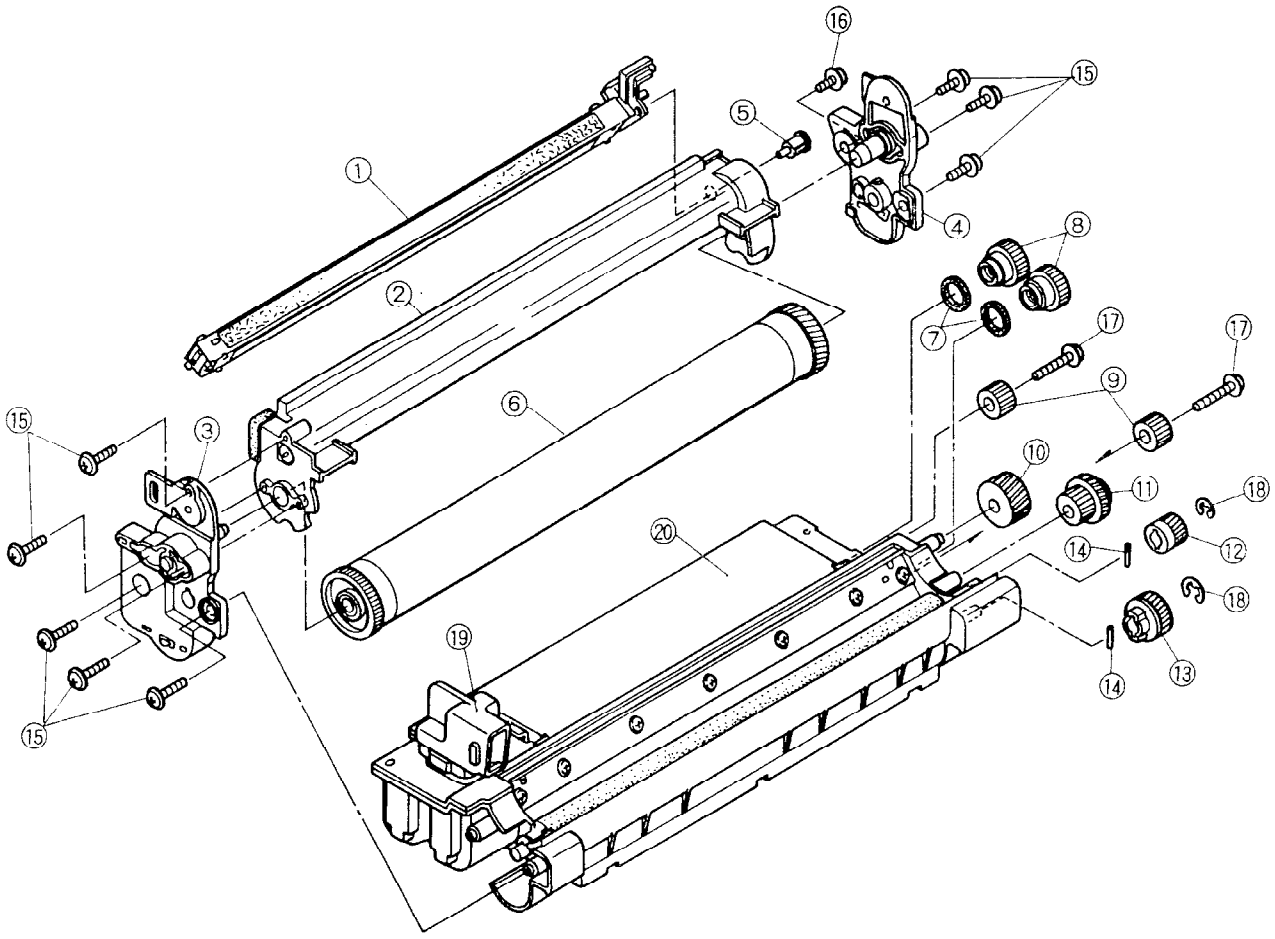
Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJDR215Z	Baffle Roller	1	
2	PJDR120Y	Roller	2	
3	PJNW212Z	Plastic Clip	2	
4	PJMX188Z	Baffle Roller Holder	1	
5	PJDG50349Z	Gear	1	
6	PJDS2023Z	Spring	1	
7	PJDZ37Z	Transfer Wire	1	
8	PJMX187Z	Spring Side Wire Cover	1	
9	PJMX186Z	Wire Cover	1	
10	PJHM570Z	Conductor	1	
11	PJDS3151Z	Spring	2	
12	PJDJ04259CZ	Roller Supporter	2	
13	PJMC224Z	Transfer Wire Bracket	1	
14	PJYP2P6100G	Process Unit Side Cover Assembly	1	
15	PJKH5006Z	Hook	2	
16	PJDS7125Z	Spring	1	
17	PJDF9521Z	Release Shaft	1	
18	XPL2A8WVW	Pin	1	
19	PJKH5007Z	Release Tab	1	
20	PJHE5082Z	Screw	1	
21	XTW26+6P	Screw 2.6 X 6	2	
22	XTW3+8S	Screw 3 x 8	4	
23	XYN3+J8	Screw 3 x 8	1	
24	XUC2VW-V	E-ring	1	
25	XPJ2A8VW	Pin	2	
26	PJNW310Z	Plastic Washer	4	
27	PJHGA0005Z	Conductive Sheet	2	
28	PJMC218Z	Discharge Brush	1	

10.1.3 Packing Material



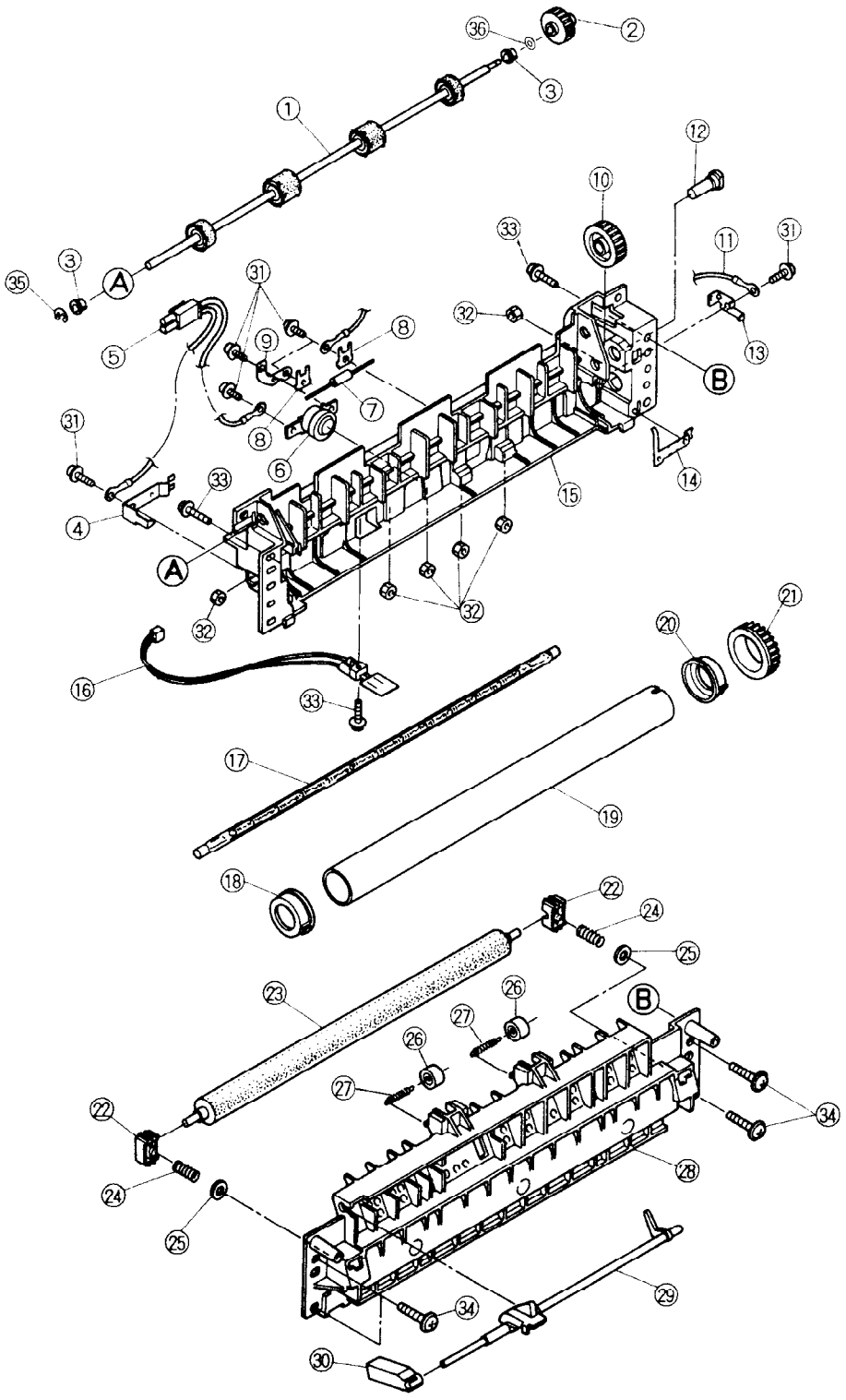
Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJPGA5005Z	Carton Box	1	
2	PJPN928Z	Front Pad	1	
3	PJPN929Z	Rear Pad	1	
4	XZB55X45A03	Plastic Sheet	1	
5	PJQMA0048Z	Operation Manual , Hard	1	
6	PJWFP6100U	Printer Driver Diskette	1	
7	PJJA116Y	AC Cord	1	

10.2 Process Unit



Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJWEP6100M	Charge Corona Unit	1	
2	PJWE1P6100M	Drum Cover	1	
3	PJWE2P6100M	Disposal Toner Tube Side Cover	1	
4	PJWE3P6100M	Drive Gear Side Cover	1	
5	PJHR9447Z	Bushing	1	
6	PJDD93018Z	OPC Drum	1	
7	PJHR5263Z	Foam Ring	2	
8	PJDG50483Z	Paddle Gear	2	
9	PJDG50484Z	Gear	2	
10	PJDG50482Z	Gear	1	
11	PJDG50481Z	Gear	1	
12	PJDG50479Z	Gear	1	
13	PJDG50480Z	Gear	1	
14	XPJ2A10ZW	Parallel Pin	2	
15	XTW3+U8S	Screw 3 x 8	8	
16	XTW3+U8L	Screw 3 x 8	1	
17	XTW3+U16S	Screw 3 x 16	2	
18	XUC5VW-V	E-ring	2	
19	PJWE4P6100M	Tube Assembly	1	
20	PJWE5P6100G	Door Assembly	1	

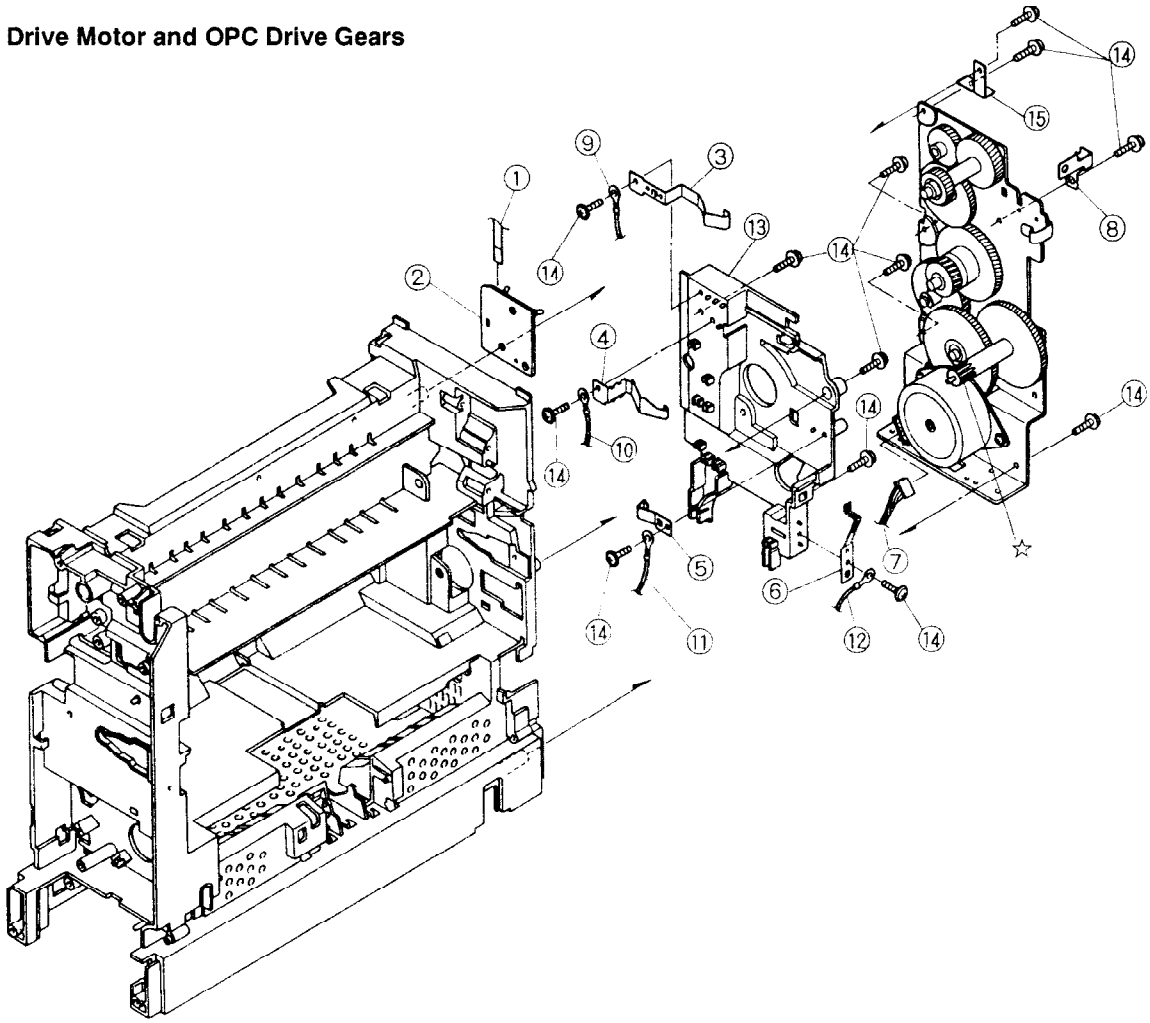
10.3 Fuser Unit



Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJDR217Z	Paper Ejection Roller	1	
2	PJDG50478Z	Ejection Roller Gear	1	
3	PJDJ04191RZ	Bushing, Ejection Roller	2	
4	PJUS290Z	Heat Lamp Terminal	1	
5	PJJS1048Z	Fuser Cable	1	
6	PJSE6Z	Thermostat	1	
7	PJXC2456Z	Thermal Fuse	1	
8	PJUSA0006Z	Conductor	2	
9	PJUSA0007Z	Conductor	1	
10	PJDG50432Z	Gear	1	
11	PJJT337Z	Lead Wire	1	
12	PJDF9523Z	Gear Shaft	1	
13	PJUSA0001Z	Heat Lamp Terminal	1	
14	PJHM571Z	Earth Plate	1	
15	PJKE243Y	Heat Roller Holder	1	
16	PJRT124Z	Thermistor	1	
17	PJXA40005Z	Heat Lamp	1	
18	PJDJ20031RZ	Bushing	1	
19	PJDR216Z	Heat Roller	1	
20	PJDJ20021RZ	Bushing	1	
21	PJDG50477Z	Heat Roller Gear	1	
22	PJDJ04139RZ	Bushing	2	
23	PJDR221Z	Pressure Roller	1	
24	PJDS4122Z	Pressure Roller Spring	2	
25	XWG5F10FX	Pressure Roller Washer	2	
26	PJDR218Z	Ejection Pinch Roller	2	
27	PJDS2081Z	Spring	2	
28	PJKE244Y	Pressure Roller Holder	1	
29	PJHR3154Z	Paper Ejection Sensor Lever	1	
30	PJHR3115Z	Ejection Sensor Shutter	1	
31	XYN3+F8	Screw 3 x 8	6	
32	XNG3B	Nut	6	
33	XTW3+12S	Screw 3 x 12	3	
34	XTW4+16S	Screw 4 x16	4	
35	XUC3VW-V	E-ring	1	
36	PJHE6053Z	Washer	1	

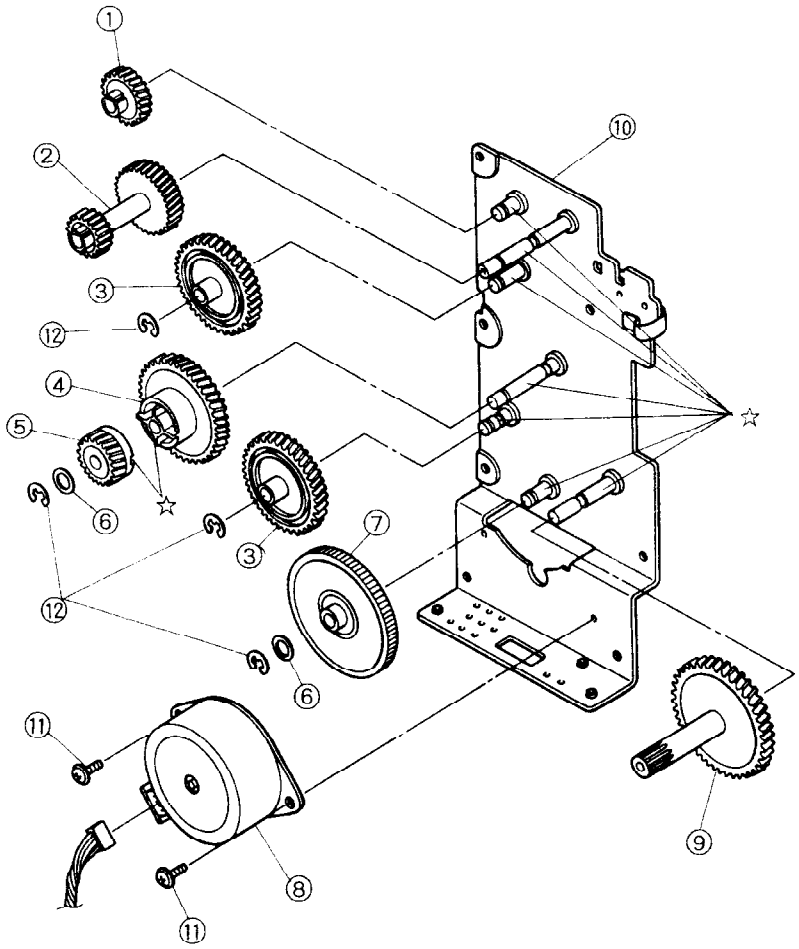
10.4 Drive Mechanism

10.4.1 Drive Motor and OPC Drive Gears



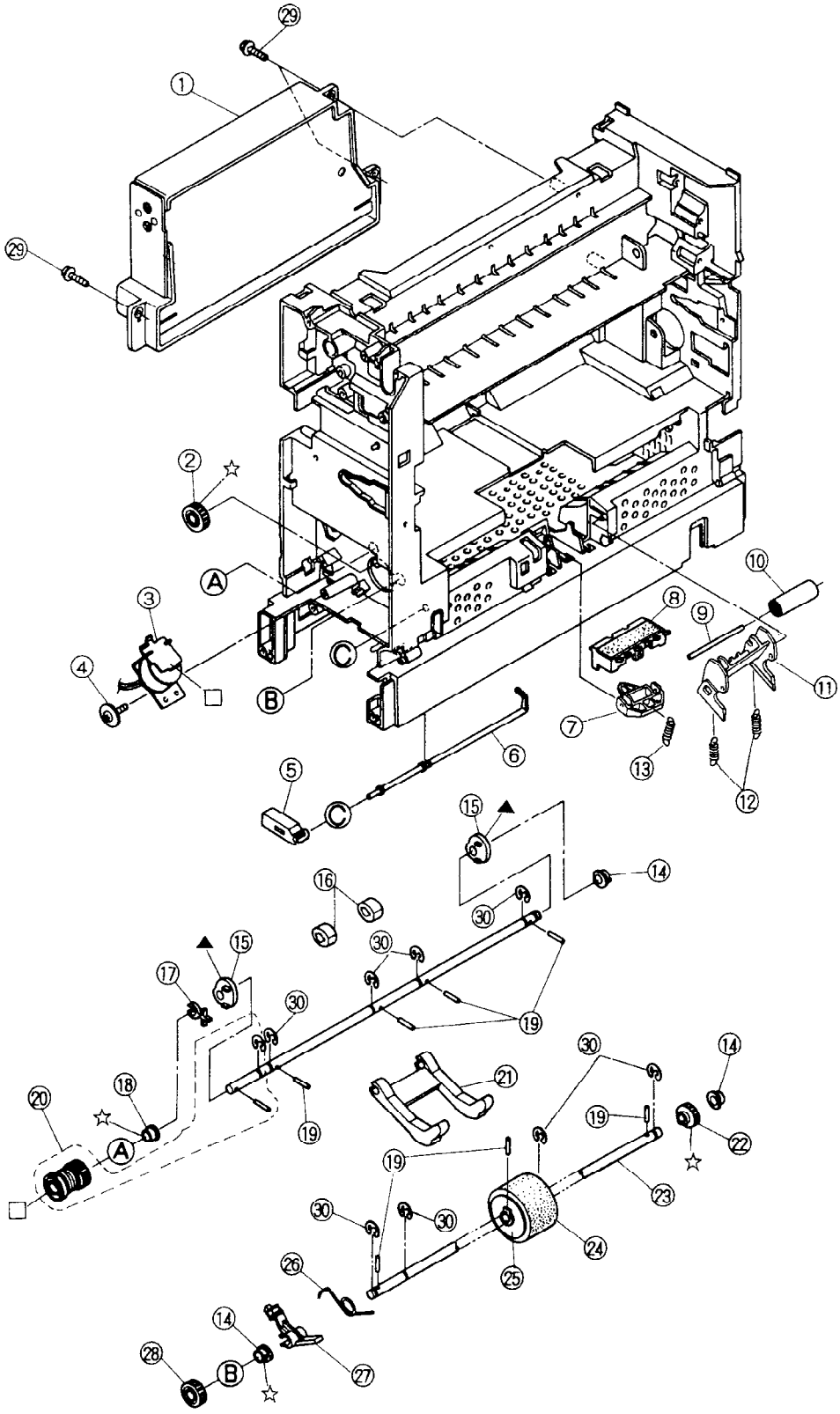
Ref No.	Part No.	Part Name and Descriptior	Per Set	Remarks
1	PJJE358Z	Indicator Cable	1	
2	PJWP2P6150U	Indicator Board	1	RTL
3	PJUS279Z	Conductor	1	
4	PJUS280Z	Conductor	1	
5	PJUS281Z	Conductor	1	
6	PJUS282Z	Conductor	1	
7	PJJS1045Z	Motor Cable	1	
8	PJMDA0009Z	Earth Plate	1	
9	PJJT333Z	Lead Wire	1	
10	PJJT334Z	Lead Wire	1	
11	PJJT335Z	Lead Wire	1	
12	PJJT336Z	Lead Wire	1	
13	PJHR3120Z	Terminal Bracket	1	
14	XTW3+U10S	Screw 3 x 10	13	
15	PJUSA0005Z	Earth Plate	1	

10.4.2 Drive Gears



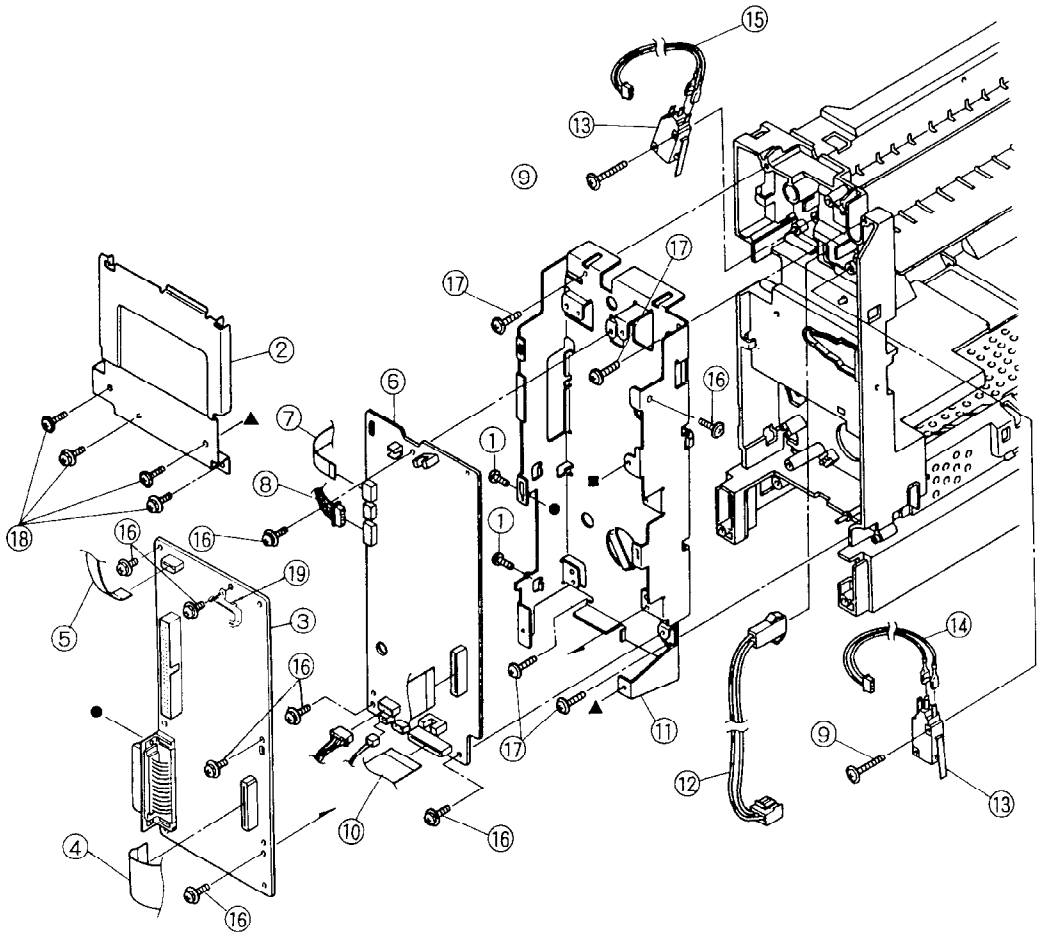
Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJDG50474Z	Gear	1	
2	PJDG50475Y	Gear	1	
3	PJDG50470Z	Gear	2	
4	PJDG50471Y	Gear	1	
5	PJDG50485Y	Gear	1	
6	PJHM364Z	Plastic Washer	2	
7	PJDG50469Z	Gear	1	
8	PJJQ204Z	Drive Motor	1	
9	PJDG50472Z	Gear	1	
10	PJZHP6100M	Drive Gear Bracket	1	
11	XTW3+8L	Screw 3 x 8	2	
12	XUC5VW-V	E-ring	4	

10.4.3 Paper Feed Mechanism



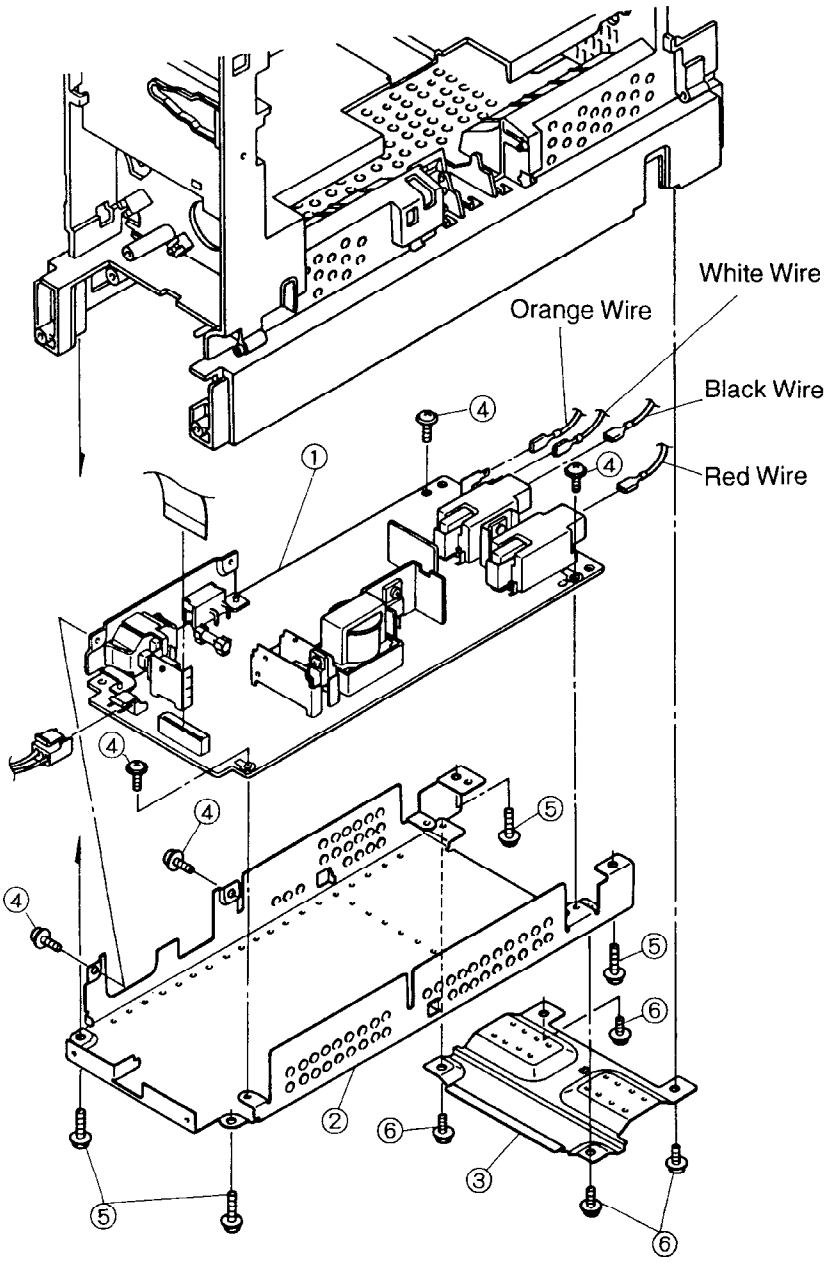
Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJSG9016Z	Laser Scanning Unit (LSU)	1	
2	PJDG50327Z	Gear	1	
3	PJFP47Z	Solenoid	1	
4	PJHE5065Z	Screw	1	
5	PJHR3115Z	Gate Sensor Shutter	1	
6	PJHR3113Z	Gate Sensor Lever	1	
7	PJHR3110Z	Delay Pad Arm	1	
8	PJZEP6100M	Delay Pad Assembly	1	
9	PJDF9509Z	Pinch Roller Shaft	1	
10	PJDR213Z	Pinch Roller	1	
11	PJHR3119Z	Pinch Roller Holder	1	
12	PJDS50715Z	Pinch Roller Spring	2	
13	PJDS50714Z	Delay Pad Spring	1	
14	PJDJ06121RZ	Bushing	3	
15	PJDG55251Z	Tray Cam	2	
16	PJDG55248Z	Delay Pad Cam	2	
17	PJHR3033Z	Stopper	1	
18	PJDJ06501RZ	Bushing	1	
19	XPL2A10WVW	Pin	7	
20	PJZFP6100M	Clutch Assembly	1	
21	PJHR3111Z	Delay Pad Lever	1	
22	PJDG50473Y	Gear	1	
23	PJDF9507Y	Pickup Roller Shaft	1	
24	PJHG9103Z	Pickup Roller, Rubber	1	
25	PJHR9725Z	Pickup Roller	1	
26	PJDS7127Z	Resist Cam Spring	1	
27	PJHR5256Z	Resist Cam Stopper	1	
28	PJDG50326Z	Pickup Roller Gear	1	
29	XTW3+14S	Screw 3 x 14	3	
30	XUC5VW-V	E-ring	8	

10.5 Main and Engine Boards Mechanical Parts



Ref No.	Part No.	Part Name and Descriptior	Per Set	Remarks
1	XSN3+6	Screw 3 x 6	2	
2	PJUA294Z	Lower Shield Cover	1	
3	PJWPP6150U	Main Logic Board	1	RTL
4	PJJE357Z	Flat Cable (Logic Board)	1	
5	PJJE360Z	Indicator Cable	1	
6	PJWP1P6150U	Engine Board	1	RTL
7	PJJE359Z	Flat Cable (Laser Unit)	1	
8	PJJS1077Z	Cable (Laser Unit)	1	
9	XTW3+16S	Screw 3 x 16	2	
10	PJJE356Z	Flat Cable (Power Supply)	1	
11	PJZCP6100M	Logic Board Bracket	1	
12	PJJS1049Z	Fuser Relay Cable	1	
13	PJSH1A41Z	Interlock Switch	2	
14	PJJT349Z	Interlock Switch Cable (+24V)	1	
15	PJJT350Z	Interlock Switch Cable (+5V)	1	
16	XYC3+FF6	Screw 3 x 6	8	
17	XTW3+U10S	Screw 3 x 10	4	
18	XTW3+8L	Screw 3 x 8	4	
19	PJUSA0014Z	Earth Plate	1	

10.6 High/Low Voltage Power Supply Unit



High Voltage Conductors	
Orange	Grid
White	Dev. Bias
Black	Charge Corona
Red	Transfer Corona

Ref No.	Part No.	Part Name and Description	Per Set	Remarks
1	PJPM38Z	High/Low Voltage Power Supply Unit	1	Non Repairable
2	PJUA296Z	Power Supply Bracket	1	
3	PJUV97Z	Access Panel	1	
4	XTW3+8L	Screw 3 x 8	5	
5	XTW3+U10S	Screw 3 x 10	4	
6	XTW3+8L	Screw 3 x 8	4	

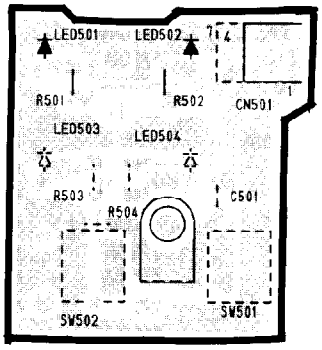
Main Logic Board

Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
IC1	PJVINS32CG16	IC (CPU)			1	
IC2	PJVIMB244148	IC			1	
IC3	PJWIP6150U	IC			1	
IC4	PJWI1P6150U	IC			1	
IC5, 6	PJVIHM5148J8	IC			2	
IC8	PJVI24LC02BP	IC			1	
IC9	PJVISN7406ST	IC			1	
IC10	PJVIM51953BF	IC			1	
IC11	PJVIMCHCU04M	IC			1	
IC12	PJVICF45529N	IC			1	
L1 ~ 6	PJLQ108Z	Coil			6	
QA1, 2	PJVTITBPBAA1	Transistor Array			2	
CN1	PJJS522Z	Connector			1	
CN2	PJJS714Z	Connector			1	
CN3	PJJS414Z	Connector			1	
CN4	PJJP276Z	Connector			1	
X1	PJVC3200AT49	X'tal			1	
X2	PJCXC133011	Ceramic Oscillator			1	
JP1	PJJT263Z	Jumper			1	
R1 ~ 4	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	4	
R5	ERJ6GEYJ101V	100	1/10W	Chip Resistor	1	
R6	ERJ6GEYJ103V	10K	1/10W	Chip Resistor	1	
R7, 8	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	2	
R9	ERJ6GEYJ750V	75	1/10W	Chip Resistor	1	
R10	ERJ6GEYJ560V	56	1/10W	Chip Resistor	1	
R12 ~ 15	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	4	
R17	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	1	
R18	ERJ6GEYJ105V	1M	1/10W	Chip Resistor	1	
R19	ERJ6GEYJ471V	470	1/10W	Chip Resistor	1	
R20	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	1	
R21 ~ 23	ERJ6GEYJ220V	22	1/10W	Chip Resistor	3	
R24	ERJ6GEYJ100V	10	1/10W	Chip Resistor	1	
R25	ERJ6GEYJ103V	10K	1/10W	Chip Resistor	1	
R26	ERJ6GEYJ101V	100	1/10W	Chip Resistor	1	
R27	ERJ6GEYJ330V	33	1/10W	Chip Resistor	1	
R28	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	1	
R29 ~ 32	ERJ6GEYJ103V	10K	1/10W	Chip Resistor	4	
R33, 34	ERJ6GEYJ101V	100	1/10W	Chip Resistor	2	
R35	ERJ6GEYJ103V	10K	1/10W	Chip Resistor	1	
R36	ERJ6GEY0R00V	Dummy		Chip	1	
R37 ~ 39	ERJ6GEYJ102V	1K	1/10W	Chip Resistor	3	
R40 ~ 44	ERJ6GEYJ101V	100	1/10W	Chip Resistor	5	
R46	ERJ6GEYJ222V	2.2K	1/10W	Chip Resistor	1	
R47	ERJ14YJ4R7H	4.7	1/4W	Chip Resistor	1	
R48	ERJ6GEYJ102V	1K	1/10W	Chip Resistor	1	
R49, 50	ERJ6GEYJ330V	33	1/10W	Chip Resistor	2	
R51 ~ 56	ERJ6GEYJ150V	15	1/10W	Chip Resistor	6	
R57 ~ 64	ERJ6GEYJ102V	1K	1/10W	Chip Resistor	8	
R65	ERJ6GEYJ472V	4.7K	1/10W	Chip Resistor	1	
R66, 67	ERJ6GEYJ330V	33	1/10W	Chip Resistor	2	
R68	ERJ6GEYJ102V	1K	1/10W	Chip Resistor	1	
RA1 ~ 4	EXBV8V332J	R-Array			4	
RA5, 6	EXBV8V330J	R-Array			2	
RA7	EXBV8V560J	R-Array			1	
RA8 ~11	EXBV8V332J	R-Array			4	
RA12, 13	EXBV8V330J	R-Array			2	
RA14, 15	EXBV8V470J	R-Array			2	

Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
RA16 ~19	EXBV8V330J	R-Array			4	
RA20	EXBV8V331J	R-Array			1	
RA22	EXBV8V101J	R-Array			1	
RA23 ~ 27	EXBV8V472J	R-Array			5	
C1	ECUY1C105ZFW	1	16V	Ceramic	1	
C2	ECUV1H101JCG	100P	50V	Ceramic	1	
C3	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C4	ECUV1H030DCN	3P	50V	Ceramic	1	
C5	ECUV1H180JCN	18P	50V	Ceramic	1	
C6	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C7	ECST1CY105R	1	16V	Electrolytic	1	
C8 ~ 11	ECUV1E104ZFX	0.1	25V	Ceramic	4	
C12	ECUV1H050CCN	5P	50V	Ceramic	1	
C13	ECUV1H100DCN	10P	50V	Ceramic	1	
C14	ECUV1H330JCG	33P	50V	Ceramic	1	
C15	ECUV1H680JCG	68P	50V	Ceramic	1	
C16, 17	ECUV1E104ZFX	0.1	25V	Ceramic	2	
C19, 20	ECUV1H180JCN	18P	50V	Ceramic	2	
C22	ECUV1H100DCN	10P	50V	Ceramic	1	
C23, 24	ECUV1E104ZFX	0.1	50V	Ceramic	2	
C25	ECUV1H100DCN	10P	50V	Ceramic	1	
C26 ~ 31	ECUV1E104ZFX	0.1	25V	Ceramic	6	
C32 ~ 35	ECUV1H101JCG	100P	50V	Ceramic	4	
C36	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C37	ECUV1H101JCG	100P	50V	Ceramic	1	
C38	ECEV0JA470P	47	6.3V	Electrolytic	1	
C39 ~ 50	ECUV1H101JCG	100P	50V	Ceramic	22	
C51	ECUV1E104ZFX	0.1	25V	Ceramic	1	
C52 ~ 54	ECUV1H101JCG	100P	50V	Ceramic	3	
C61, 62	ECEV0JA470P	47	6.3V	Electrolytic	2	
C63 ~ 66	ECUV1E104ZFX	0.1	25V	Ceramic	4	
C68 ~ 70	ECUV1E104ZFX	0.1	25V	Ceramic	3	
C75	ECBT1H680J5	68	50V	Ceramic	1	

All capacitor values are in microfarads unless otherwise noted.

10.8 Indicator Board



Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
D501, 503	LN28RCPXTA3	Diode			2	
D502	LNJ308MKUACP	Diode			1	
R501, 503	ERDS2TJ181	180	1/4W	Carbon	2	
R502	ERDS2TJ151	150	1/4W	Carbon	1	
CN501	PJJS1097Z	Connector			1	
SW501	EVQQS205K	Switch			1	

Engine Board

All capacitor values are in microfarads unless otherwise noted.

Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
Integrated Circuits, Transistors and Capacitors						
IC401	PJVIUPD78213	IC (CPU)			1	
IC402	PJVINJM2903D	IC (COMPALATOR)			1	
IC403	PJVIA2918SWH	IC (MOTOR DRIVER)			1	
IC405	PJVIHD74LS38	IC (NAND)			1	
IC406	PJVI74HC573P	IC (8BIT LATCH)			1	
IC407	PJWI2P6150U	IC (EPROM)			1	
C401-408	ECBT1E223ZF	0.022	25V	Ceramic	8	
C409,410	ECBT1H100JC	10P	50V	Ceramic	2	
C411,412	ECBT1H471KB	470P	50V	Ceramic	2	
C413,414	ECBT1C103MS	0.01	16V	Ceramic	2	
C416	ECBT1H102KB	1000P	50V	Ceramic	1	
C418-422	ECBT1H101KB	100P	50V	Ceramic	5	
C423	ECBT1H471KB	470P	50V	Ceramic	1	
C424	ECBT1H102KB	1000P	50V	Ceramic	1	
C431,432	ECEA1VKA470Q	47	35V	Electrolytic	2	
C433,434	ECEA0JKA470B	47	6.3V	Electrolytic	2	
C442	ECBT1E223ZF	0.022	25V	Ceramic	1	
CA401	EXFP8470MW	C-Array			1	
D401	PJVD1SS120TD	Diode			1	
PI401,402	PJVSTLP832	Photo Interruptor			2	
Q401	2SD1992A-RTA	Transistor			1	
Q402,404-407	PJVIDTC114YS	Transistor			5	
Q409	PJVIDTC114YS	Transistor			1	
Resistors						
R401-403	ERDS2TJ102	1K	1/4W	Carbon	3	
R404,405	ERDS2TJ152	1.5K	1/4W	Carbon	2	
R406,407	ERDS2TJ823	82K	1/4W	Carbon	2	
R408-411	ERDS2TJ1R2	1.2	1/4W	Carbon	4	
R412	ERDS2TJ102	1K	1/4W	Carbon	1	
R414	EROS2TKF3542	35.4K	1/4W	Metal	1	
R415	ERDS2TJ103	10K	1/4W	Carbon	1	
R416	ERDS2TJ102	1K	1/4W	Carbon	1	
R417	ERDS2TJ103	10K	1/4W	Carbon	1	
R418	ERDS2TJ102	1K	1/4W	Carbon	1	
R419	ERDS2TJ472	4.7K	1/4W	Carbon	1	
R420	ERDS2TJ101	100	1/4W	Carbon	1	
R421	ERDS2TJ103	10K	1/4W	Carbon	1	
R422	ERDS2TJ102	1K	1/4W	Carbon	1	
R423	ERDS2TJ103	10K	1/4W	Carbon	1	
R424	ERDS2TJ102	1K	1/4W	Carbon	1	
R425	ERDS2TJ181	180	1/4W	Carbon	1	
R426	ERDS2TJ102	1K	1/4W	Carbon	1	
R427	ERDS2TJ331	330	1/4W	Carbon	1	
R428	ERDS2TJ332	3.3K	1/4W	Carbon	1	

Ref.No.	Part No.	Part Name and Description			Per Set	Remarks
R429	ERDS2TJ222	2.2K	1/4W	Carbon	1	
R430	ERDS2TJ472	4.7K	1/4W	Carbon	1	
R431-433	ERDS2TJ332	3.3K	1/4W	Carbon	3	
R434	ERDS2TJ153	15K	1/4W	Carbon	1	
R435	ERDS2TJ222	2.2K	1/4W	Carbon	1	
R436	ERDS2TJ332	3.3K	1/4W	Carbon	1	
R437	ERDS2TJ472	4.7K	1/4W	Carbon	1	
R438	ERDS2TJ102	1K	1/4W	Carbon	1	
R439	ERDS2TJ153	15K	1/4W	Carbon	1	
R440	ERDS2TJ102	1K	1/4W	Carbon	1	
R441	ERDS2TJ332	3.3K	1/4W	Carbon	1	
R442	ERDS2TJ103	10K	1/4W	Carbon	1	
R443	ERDS2TJ103	10K	1/4W	Carbon	1	
R444,446	ERDS2TJ181	180	1/4W	Carbon	2	
R445,447,450	ERDS2TJ103	10K	1/4W	Carbon	3	
R451	ERDS2TJ153	15K	1/4W	Carbon	1	
R452	ERDS2TJ222	2.2K	1/4W	Carbon	1	
R453	ERDS2TJ153	15K	1/4W	Carbon	1	
R458	ERDS1VJ472	4.7K	1/2W	Carbon	1	
R459	ERDS2TJ823	82K	1/4W	Carbon	1	
RA401,402	EXBF9E103JYV	R-Array			2	
Others						
CN401	PJJS522Z	Connector			1	
CN402	PJJS753Z	Connector			1	
CN403	PJJP362Z	Connector			1	
CN404	PJJP444Z	Connector			1	
CN406	PJJP443Z	Connector			1	
CN407	PJJS1097Z	Connector			1	
CN408	PJJP362Z	Connector			1	
CN409	PJJP447Z	Connector			1	
CN410	PJJP445Z	Connector			1	
F401	XBAICPF25	Fuse			1	
X401	PJVC12.00R	X'tal			1	
L404 ~ 410	EXCELSR35	Inductor			7	

10.10 Special Tool

Ref No.	Tool No.	Tool Name and Description	Per Set	Remarks
TL1	PJWXP6100M	Extension Cable	1	
TL2	PJWXP6150U	Service Diskette	1	